

PREFACE

The CANON ZOOM DS-8 is a professional quality cine camera using "Double Super-8" film (16mm) in 100 ft. rolls which makes 200 ft. of Super-8 film. The advantages of the Super-8 format with its larger, brighter, picture is available in the Zoom DS-8 without the disadvantages of the Super-8, cartridge, such as inability to rewind film for special effects and short length of film.

This Repair Guide is issued for the purpose of quality assurance and standardization of repair methods used in the maintenance of the Canon DS-8. This guide consist of Disassembly and Adjustment and Repair sections.

If you have any comments which might help to improve this or future Repair Guides, please send them to:

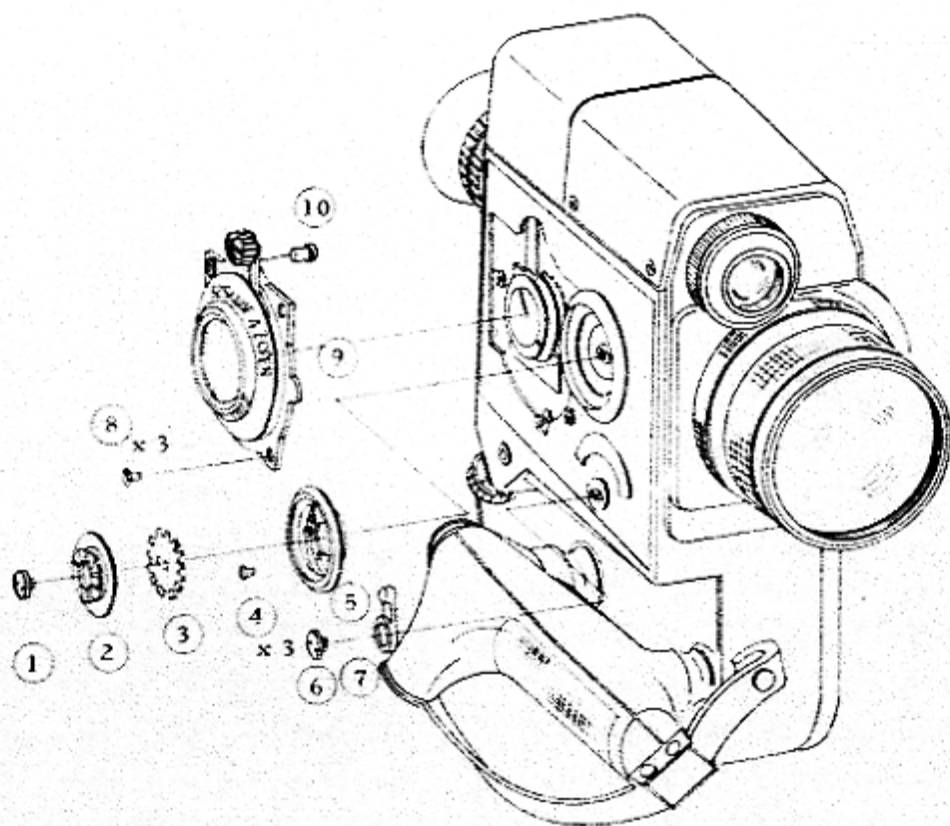
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I Disassembly

1. Removal of Case-I



Removal of Frame Knob (5)

Remove it in the following sequence:

Pin Face Screw (1) Knurled Knob (2)
33-3181 33-6146

Click Disc (3) Screw x 3 (4) Frame Knob (5)
33-6193 X16-200351 33-6145

Removal of Switch Knob (7)

Remove (7) and (9) in the following sequence:

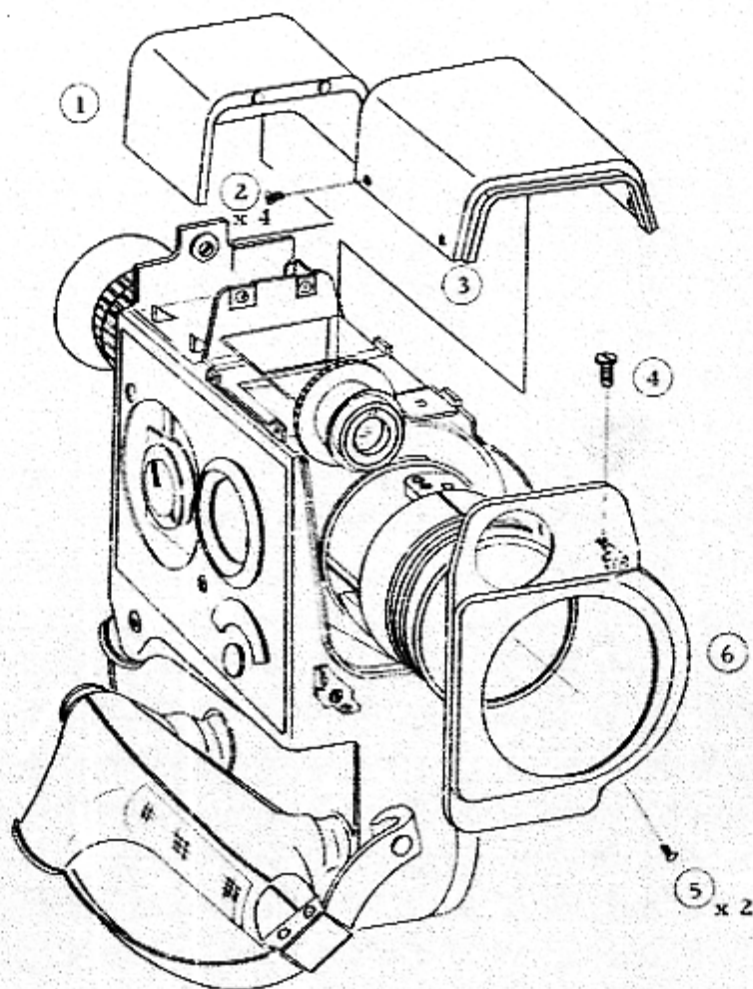
Pin Face Screw (6) Switch Knob (7)
33-3195 33-3193

Removal of Opening Angle Lever Unit (9)

Screw x 2 (8) Disolving Shutter Lever Unit (9)
X16-170357

Release Pin (10)
33-6060 is detachable also.

3. Removal of Case-3



Removal of Battery Cover (1)

Remove (1), (3) and (6) in the following sequence:

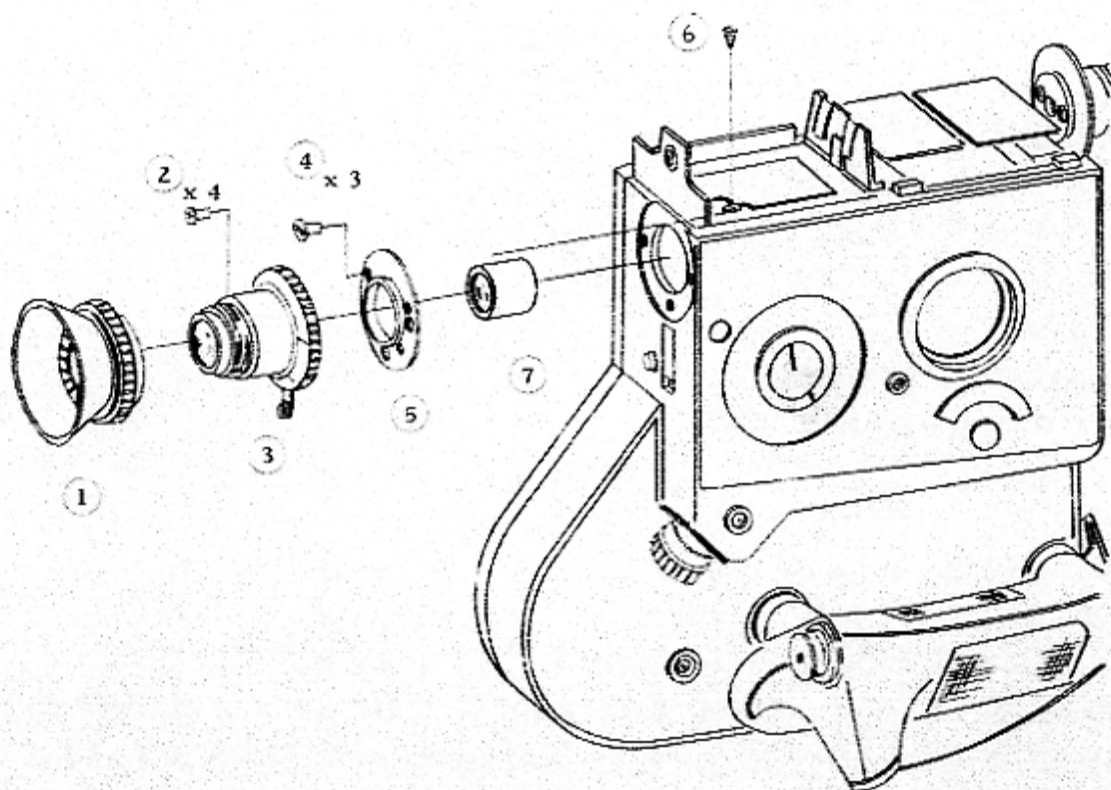
<u>Battery Cover (1)</u>	-	<u>Screw (2) x 4</u>	-	<u>Top Cover (3)</u>
39-9825		X14-200508		39-9824

Removal of Top Cover (3)

<u>Screw (4)</u>	-	<u>Screw (5) x 2</u>	-	<u>Front Cover (6)</u>
X16-170301		X13-170302		39-9826

Removal of Front Cover (6)

4. Removal of Case-4



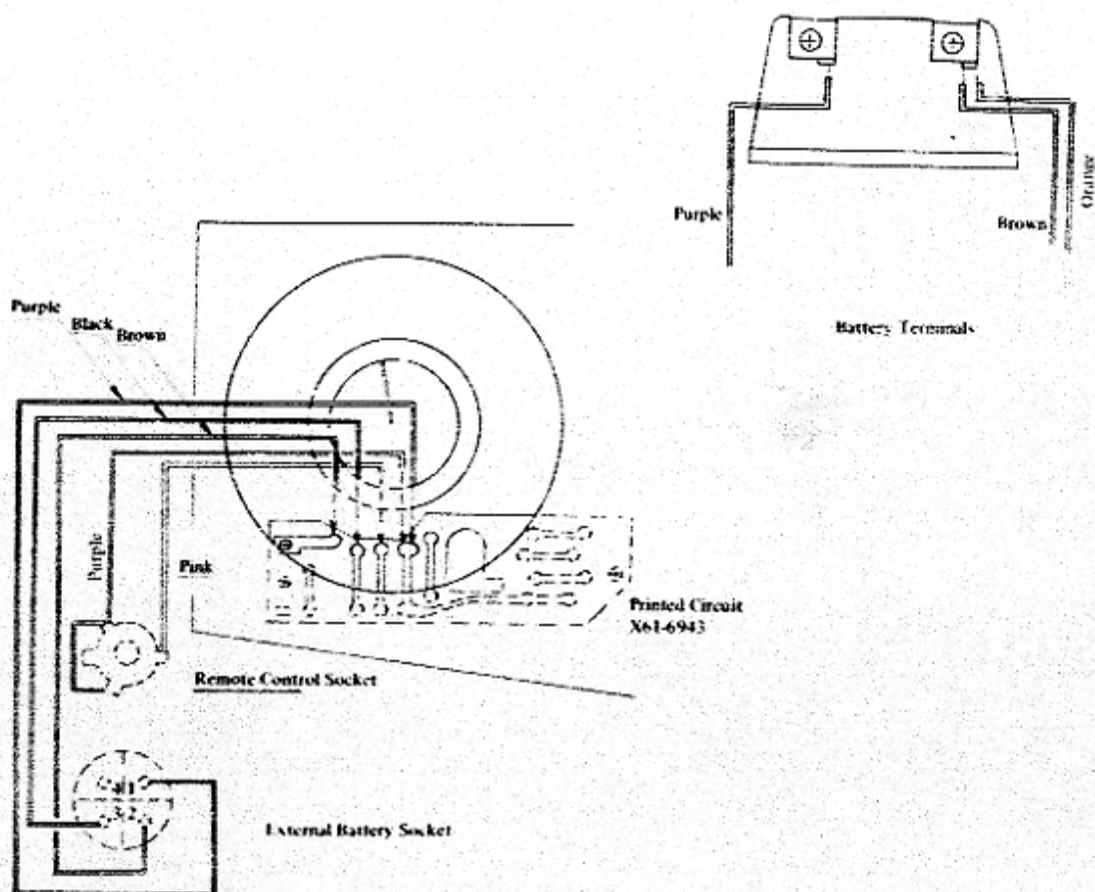
Removal of Eyepiece (3) Remove (3), (5) and (7) in the following sequence:

Eyepiece Cap (1) - Screw (2) x 4 - Eyepiece (3)
X19-171424 - Y00-1205

Removal of Eyepiece Holder (5) Screw (4) x 3 - Eyepiece Holder (5)
X91-203513 - 33-6198

Removal of Finder Tube (7) Screw (6) - Finder Tube (7)
X10-170208 - 33-6181

5. Removal of Case-5



**Disconnection of
Battery Contact
Lead Wire**

Disconnect the following lead wires:

Positive side: Brown lead wire
Orange lead wire

Negative side: Purple lead wire

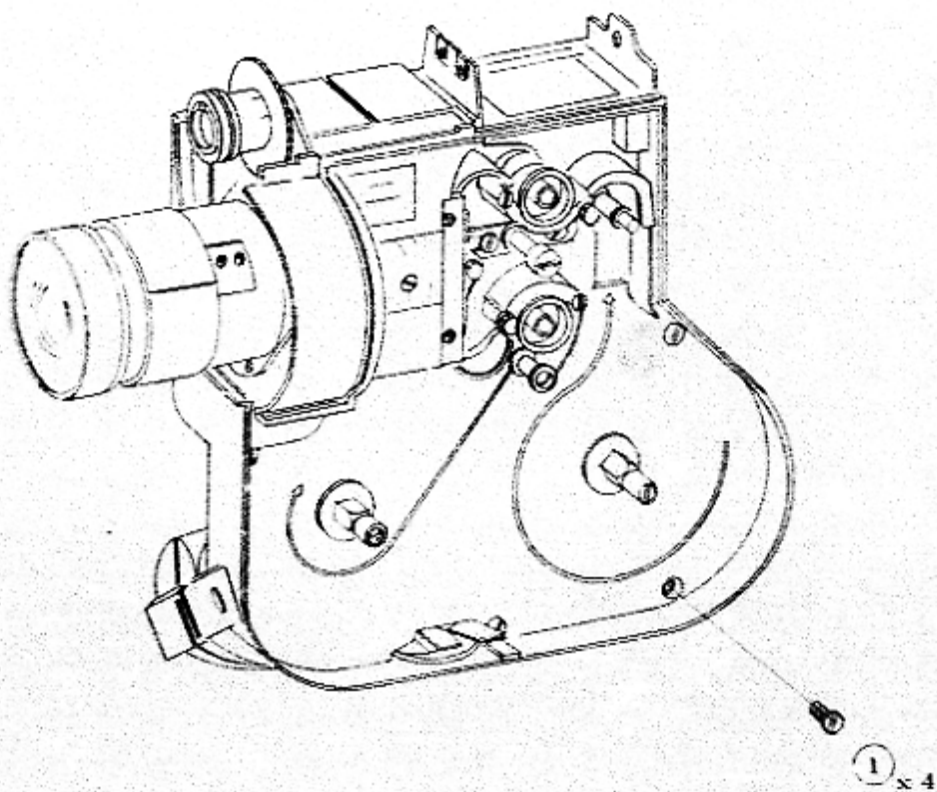
**Disconnection of
External Power
Supply Socket
Lead Wire**

Purple, Black and Brown lead wires

**Disconnection of
Remote Control Jack
Lead Wire**

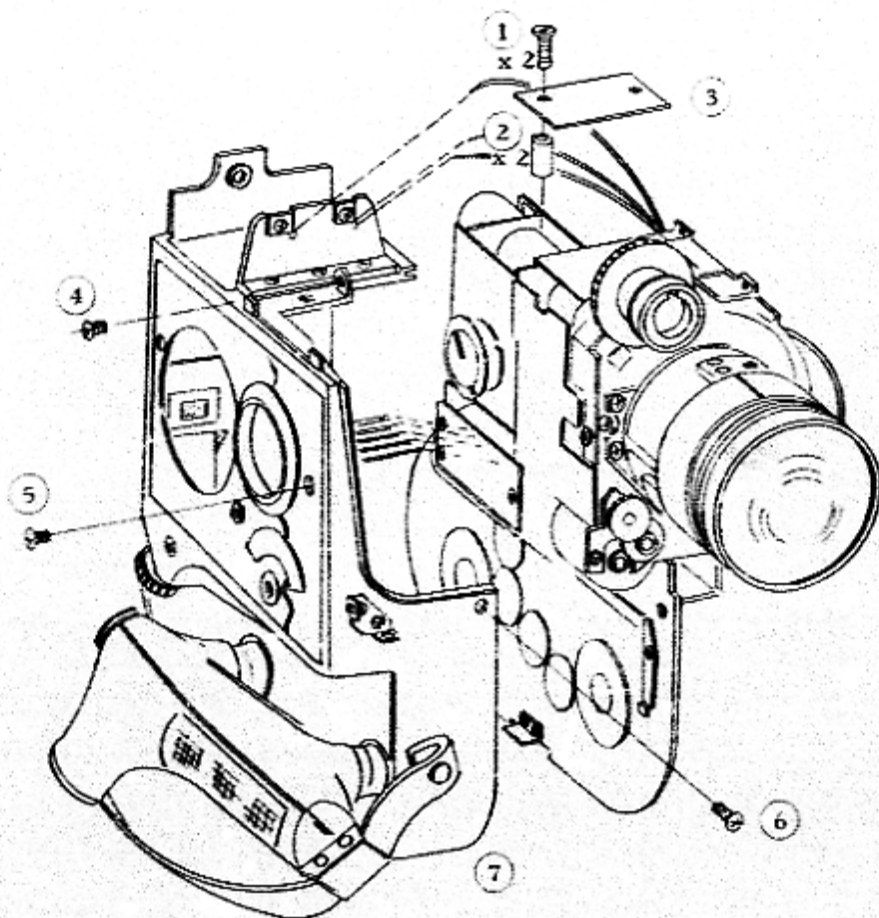
Purple and Pink lead wires

6. Removal of Case-6



Removal of Screw (1) Remove four Screws.
X05-300608

7. Removal of Case-7



Removal of Printed Circuit Board (3)

Remove (3) and (7) in the following sequence:

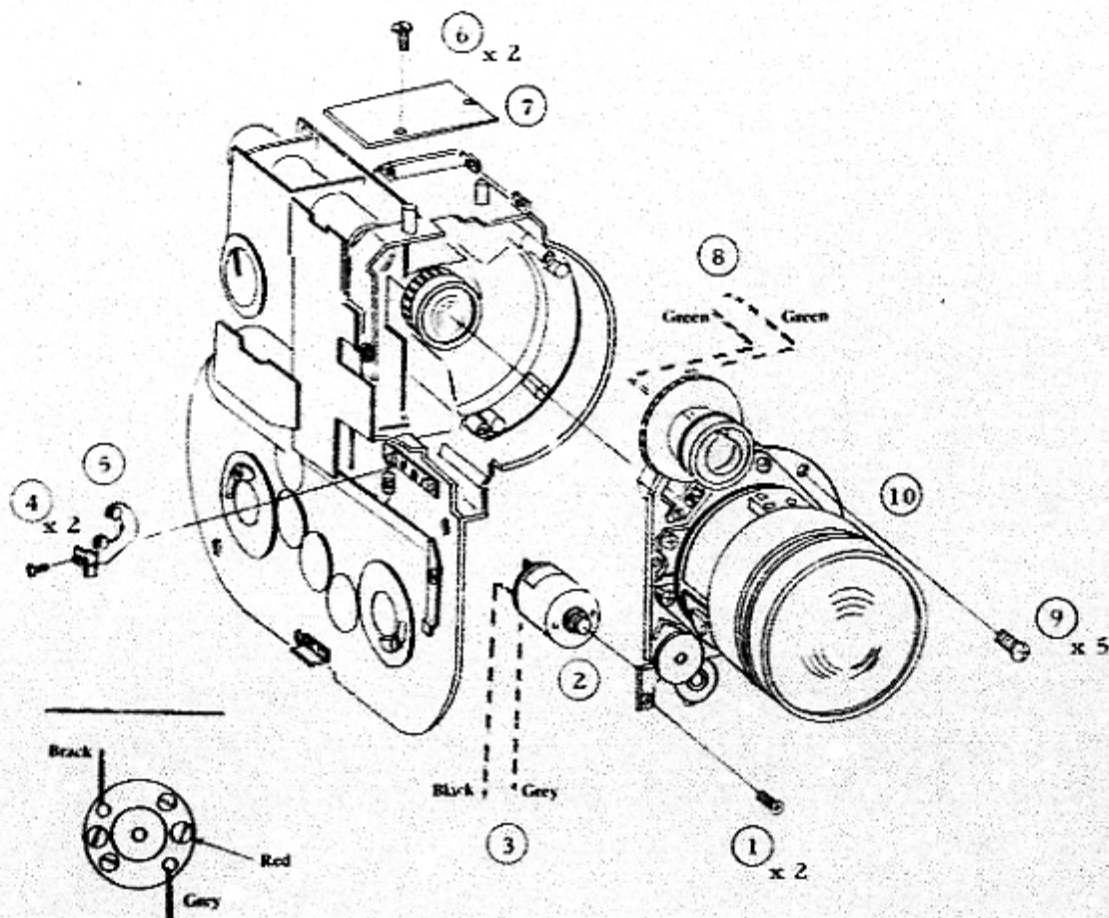
Screw (1) x 2 - Spacer (2) x 2 - Printed Circuit (3)
X91-203536 - 33-6182

Removal of Main Body Case (7)

Screw (4) - Screw (5) - Screw (6)
X06-300607 - X06-300607 - X11-260608

Main Body Case (7)

8. Removal of Lens Unit



Removal of EE Motor Remove (2), (5), (7) and (10) in the following sequence:

Removal of Gear
Switch Lever (5)

Removal of Printed
Circuit Board

Screw (1) x 2 - EE Motor (2) - Two Motor Lead
X16-170257 X61-2060

Wires, black and grey (3) - Screw (4)
X16-200158

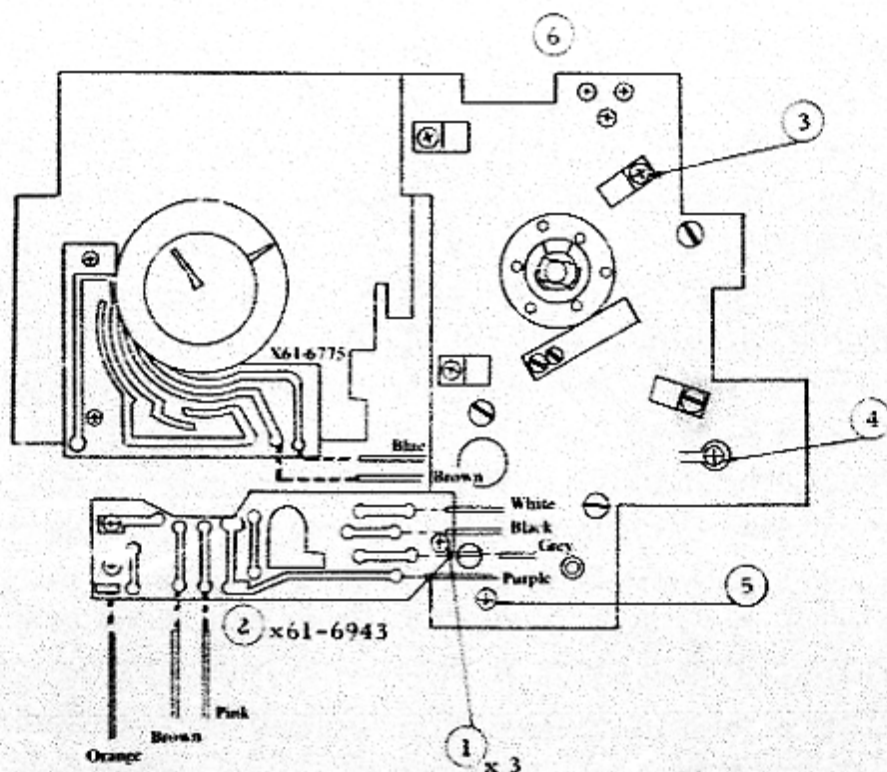
Removal of Lens
Unit

Gear Switch Lever (5) - Screw (6) x 2
39-9688 X91-203536

Printed Circuit Board (7) - Two Cds Lead Wires (8)

Screw (9) x 5 - Lens Unit (10)
X11-260508

9. Removal of ASA Change Unit



Disconnection of Lead Wires

Disconnect two lead wires, Blue and Brown, from Printed Circuit Board X61-6775.

Disconnect seven lead wires from Printed Circuit Board X61-6943. Note lead wire position.

Removal of Printed Circuit Board (2)

Remove (2) and (6) in the following sequence:

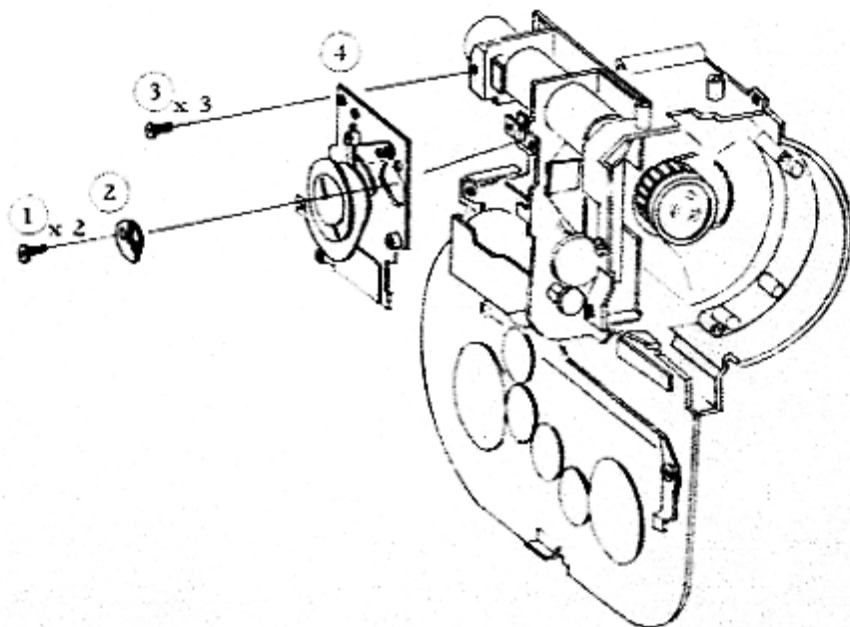
Screw (1) x 3 - Printed Circuit Board (2) -

Screw (3) - Screw (4) - Screw (5) -

Removal of ASA Change Unit (6)

ASA Change Unit (6)
38-0193

10. Removal of Film Counter Unit



Removal of Disolving
Shutter Gear (2)

Remove (2) and (4) in the following sequence:

Screw (1) x 2
X91-20-535

Disolving Shutter Gear (2)
33-6052

Removal of Film
Counter Unit (4)

Screw (3) x 3
X91-173200

Film Counter Unit (4)

II Exchange and Adjustment Procedures

1. Shutter

Work

Procedure

1-1 Shutter Checks and Adjustment

1-1-1 Checking of Shutter Blade Position

Check the position at the place where, on running Gear 97-0595, Stop Lever 39-9839 is caught in Shutter Stopper groove and strikes arrow-mark A of the Stopper. See Fig. 1.

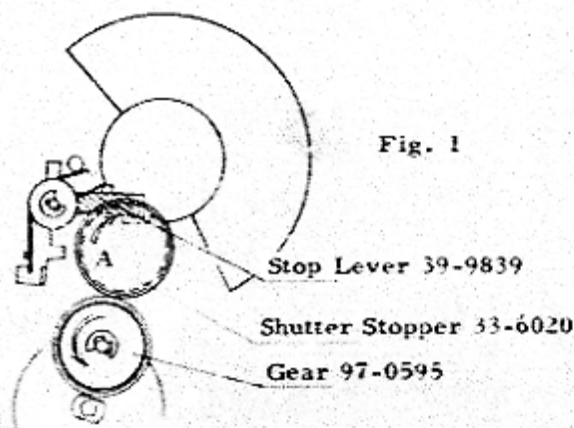


Fig. 1

As for Shutter Blade position, screw hole B for Shift Gear 39-9828 should be on a line extended from the edge of the Shutter Blade. See Fig. 2.

n.b. Sector Unit is provided with two Shutter Blades, and the blade next to the lens is used as a dissolving shutter. To check Shutter Blade position, use the blade next to the motor.

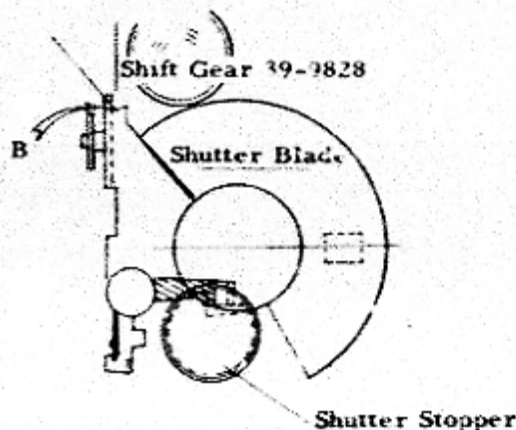


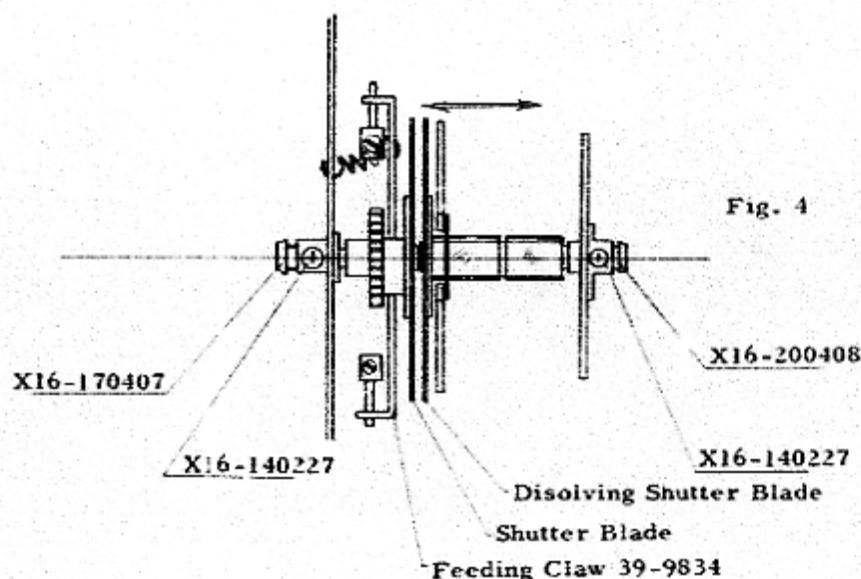
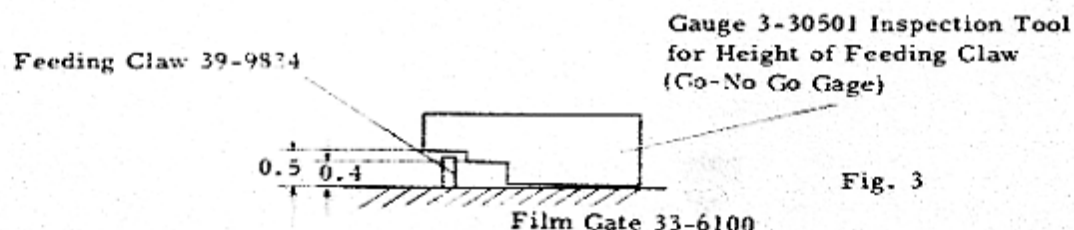
Fig. 2

Make the adjustment by changing the engagement of Shutter Blade gear 38-0191.

1-1-2 Checking of Feeding Claw

o Checking of height of Feeding Claw

The height of Feeding Claw 39-9834 should be set between 0.4 and 0.5 mm above the face of Film Gate 33-6100. The feed claw should clear the first step, but not clear the second step of the "Go-No Go" gage. See Fig. 3.



The height of Feeding Claw is adjustable by sliding Shutter Blade horizontally with Screw X16-170407 and Screw X16-200408 after loosening the two Screws X16-140227. (Fig. 4)

n.b. The thrust play of Shutter Blade should be between 0.01 and 0.02 mm. The adjustment is made with Screw X16-200408.

c Checking of Feeding Claw pressure

The pressure should be between 55 and 70g. The adjustment is made by changing Coil Spring 97-5603 of Feeding Claw. See Fig. 5.

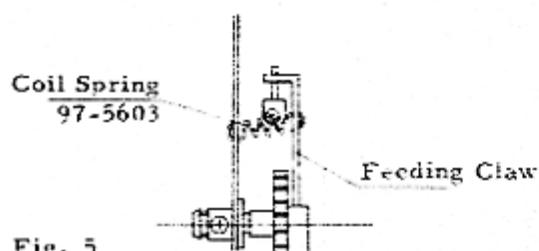


Fig. 5

o Checking of Feeding Claw position

(Checking of perforation position)

The lowest position of Feeding claw should be 13.28 ± 0.12 mm from the center of Frame.

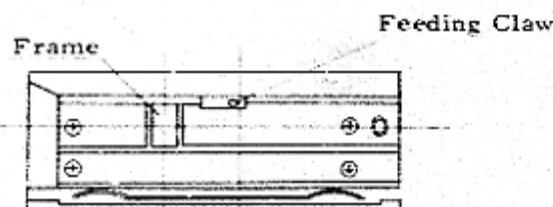


Fig. 6

13.28
±0.12mm

Checking procedures

- 1) Mount Inspection Tool 3-30501 for Positioning Feeding Claw on Film Gate.

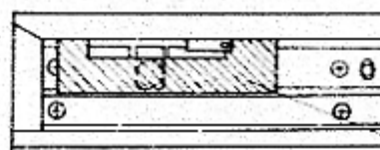


Fig. 7

Inspection Tool 3-30501
for Positioning
Feeding Claw

- 2) Check Feeding Claw position where Stop Lever 39-9839 catches in the groove of Shutter Stopper 33-6020 when turning Shutter.
(Feeding Claw is situated at the lowest position with respect to Frame.)

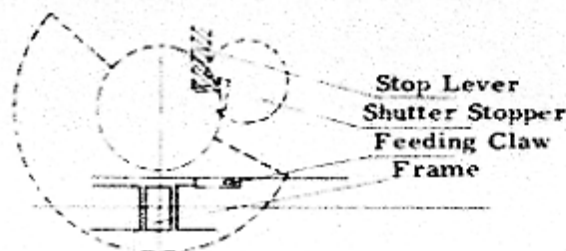
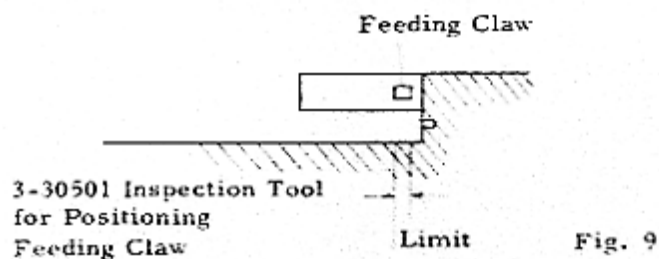
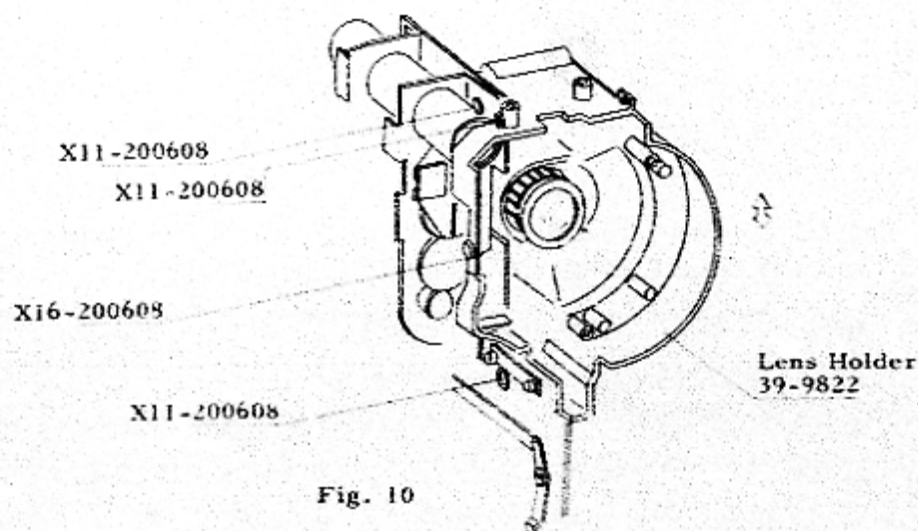


Fig. 8

- 3) The Feeding Claw position is correct if it is 13.28 ± 0.12 mm from the Frame center. See Fig. 9.



- 4) Make the adjustment by aligning Lens Holder 39-9822-vertically. See Fig. 10.



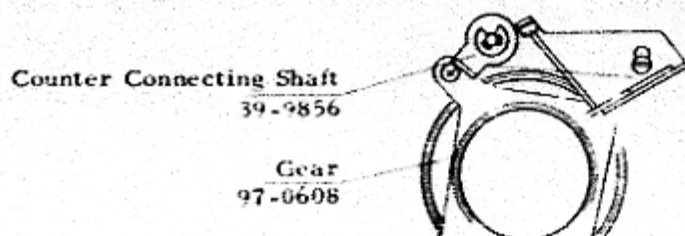
n.b. Check Feeding Claw position every time the Lens Holder is removed.

1-2 Mounting Procedures 1-2-1 Mounting of Film Counter Unit

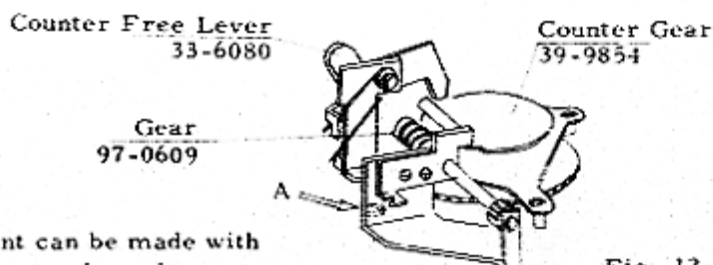
a Checking of Film Counter

Checking procedure

- 1) Counter Connecting Shaft must rotate smoothly interlocking with Gear 97-0608. See Fig. 11.



- 2) Gear 97-0609 should be firmly engaged with Counter Gear 39-9854 by pushing Counter Free Lever 33-6080 downwards. See Fig. 12.



The adjustment can be made with (Eccentric) Screw shown by arrow-mark A.

Fig. 12

- 3) When Counter Free Lever is positioned at the same place as Counter Base 39-9857, the Gear and Counter Gear should be completely disengaged. See Fig. 13.

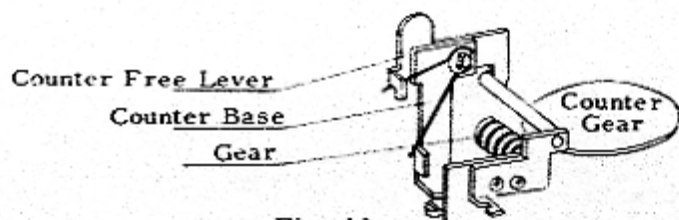


Fig. 13

o Mounting of Film Counter Unit

Mount Counter Connecting Shaft on Sprocket Gear 97-0599 and Counter Free Lever on Resetting Lever 39-9861 with three Screws X91-173200. See Fig. 14.

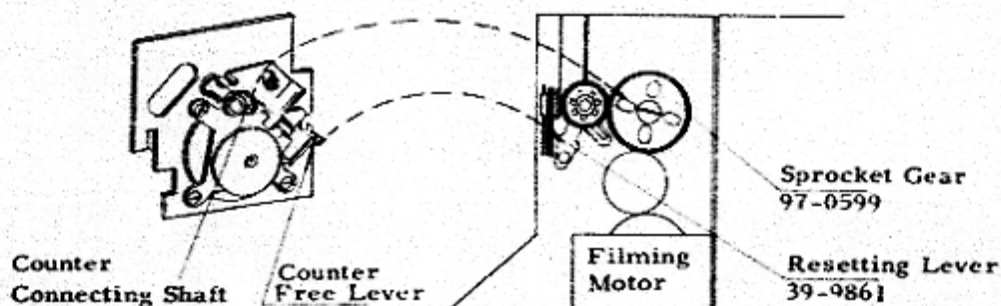


Fig. 14

1-2-2 Mounting of Dissolving Shutter Gear

- 1) Set Cam Shaft 39-9847 to the Dissolving Shutter side. See Fig. 15.

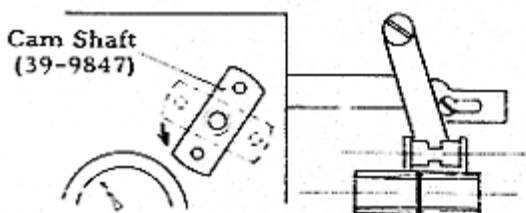
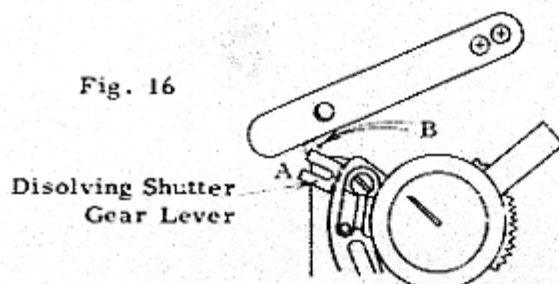
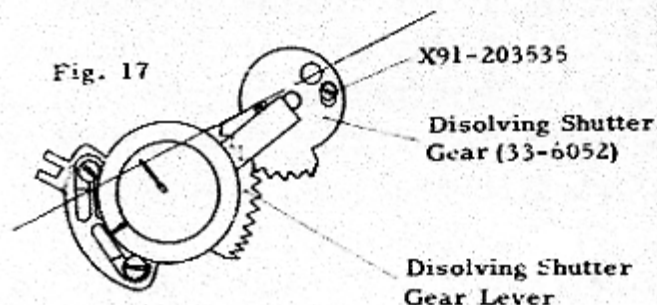


Fig. 15

- 2) Set Dissolving Shutter Gear Lever 39-9848 at "Open" position. (The open position means that A (Fig. 16) of Dissolving Shutter Gear Lever locates at the center of the rivet shown as B. See Fig. 16.



- 3) Mount Dissolving Shutter Gear 33-6052 and Gear for Dissolving Shutter Gear Lever as shown in Fig. 17. It may be mounted one tooth either side of the position shown. It must be mounted in the position it was in prior to removal.

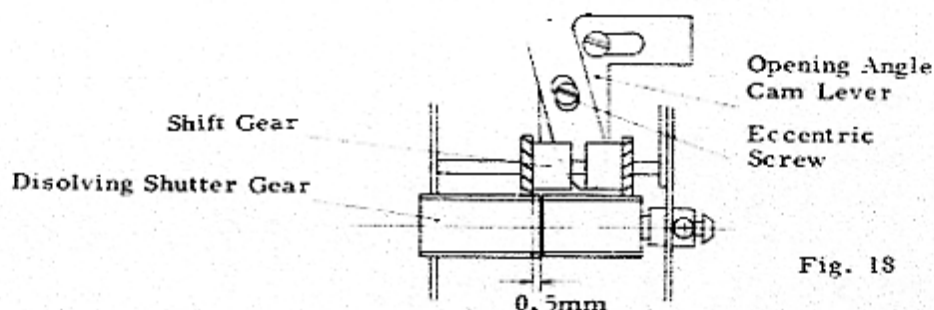


- n.b. 1. Dissolving Shutter Gear Lever must operate smoothly.
2. Engagement of Dissolving Shutter Gear with Dissolving Shutter Gear Lever is to be made by changing the mounting position of Film Counter Unit.

1-2-3 Checking of Shutter opening angle

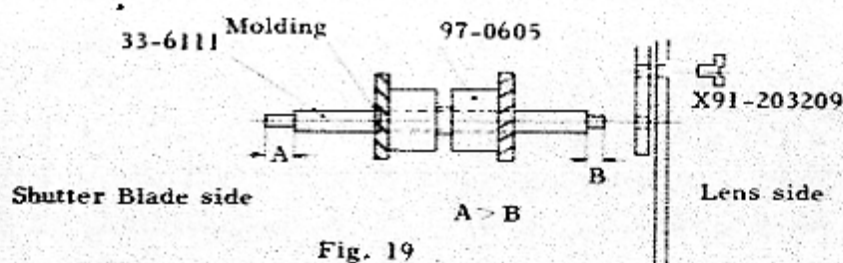
- o Checking of Shift Gear position

At the open position of Shutter Blade, there should be an overlap about 0.5 mm between Shift Gear and Disolving Shutter Gear. See Fig. 18.



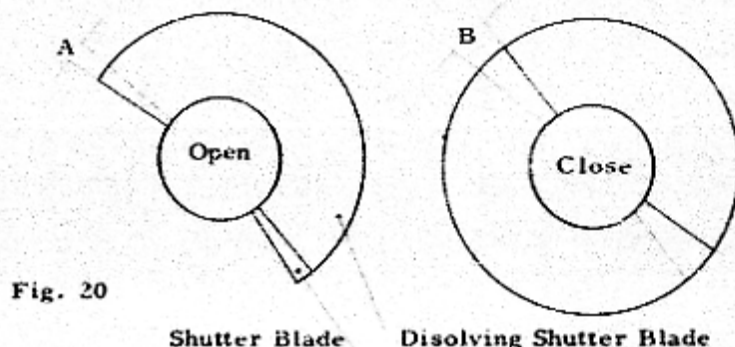
Make the adjustment with Eccentric Screw of Disolving Shutter Cam Lever 33-6047, and afterwards solder the Screw head to seal it.

n.b. Pay attention to Shift Gear position when detaching the Gear. See Fig. 19.

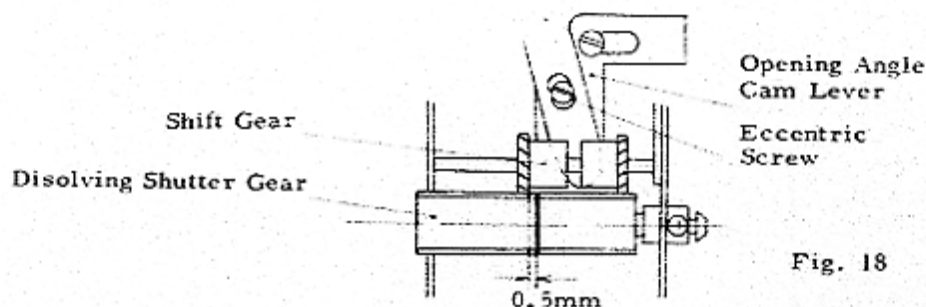


- o Checking of "Open" and "Close" positions of Disolving Shutter Blade

The positions of Shutter Blade and Shutter Opening Angle Blade in the cases of "Open" and "Close" should be as illustrated in Fig. 20. $A : B = 1 : 2$

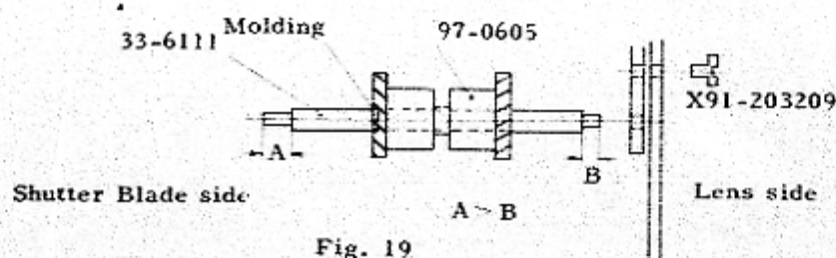


At the open position of Shutter Blade, there should be an overlap about 0.5 mm between Shift Gear and Disolving Shutter Gear. See Fig. 18.



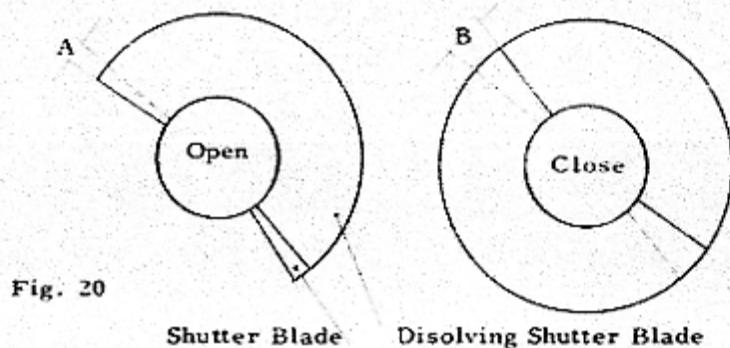
Make the adjustment with Eccentric Screw of Disolving Shutter Cam Lever 33-6047, and afterwards solder the Screw head to seal it.

n.b. Pay attention to Shift Gear position when detaching the Gear. See Fig. 19.



o Checking of "Open" and "Close" positions of Disolving Shutter Blade

The positions of Shutter Blade and Shutter Opening Angle Blade in the cases of "Open" and "Close" should be as illustrated in Fig. 20. A : B = 1 : 2



2. Filming Motor and Control Circuit

Work

Procedure

2-1 Disassembly

Motor is changeable by disassembling as far as ASA Change Unit 38-0193. (As for the disassembly procedure, refer to "Removal of ASA Change Unit.")

2-1-1 Disconnection of Lead

See Fig. 21.

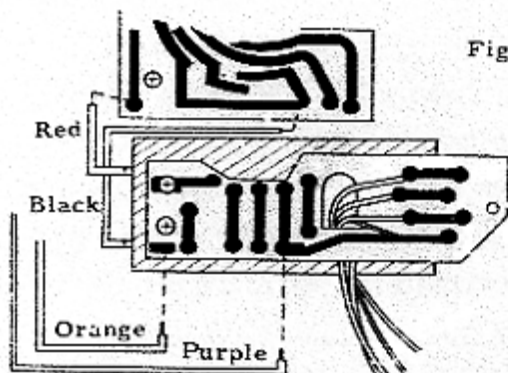


Fig. 21

2-1-2 Removal of Printed Circuit Board

n.b. 1. When removing this Board, particular attention should be paid to the Leads.

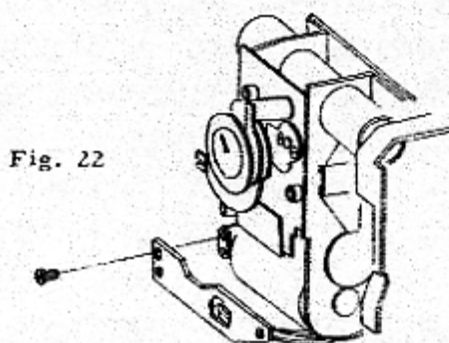


Fig. 22

2-1-3 Removal of Filming Motor

See Fig. 23.

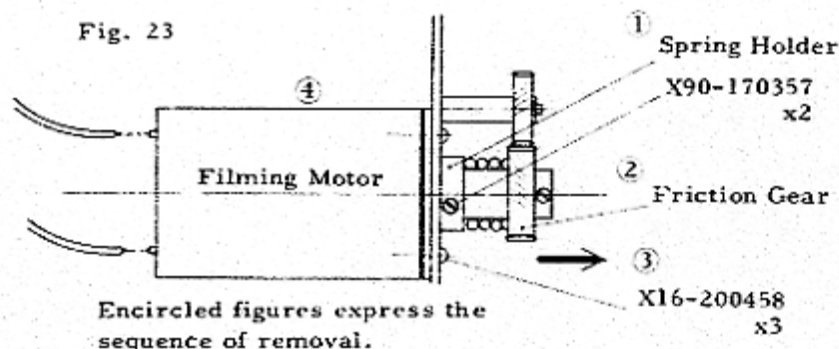
Slacken the two Screws X90-170357 of Spring Holder 33-6018. (1)

Take out Friction Gear in the arrow-marked direction. (2)

Unscrew the three Screws X16-200458 of Shutter Driving Motor. (3)

Remove Filming Motor. (4)

Fig. 23



2-2 Motor Check

Insulation Resistor 10 Mohm.

Current Value 65 mamp.

2-3 Mounting

2-3-1 Mounting of Filming Motor

- n.b. 1. Do not forget to insert Motor Gear before tightening the Motor.
2. Tighten the Motor Screws after adjusting the mesh of the Idler Gear with Motor Gear to $\frac{2}{3}$.

2-3-2 Clamping of Spring Holder with Screw

The center line of Motor Gear must coincide with that of Idler Gear.

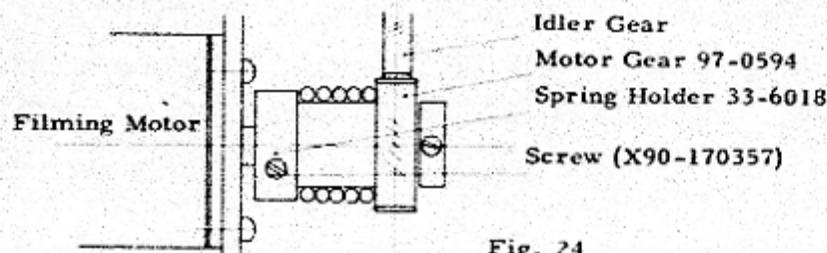


Fig. 24

- n.b. Be sure to apply clear lacquer to the Screws after fastening.

2-3-3 Checking of current of Filming Motor

The current of the Motor is checked before the Printed Circuit Board is connected to the circuit.

o Connection for Filming Motor

See Fig. 25.

- 1) Connection between (+) side of the power source and that of the Motor (Red Lead) (1)

2) Connection between (-) side of the power source and Red Lead from Shutter Switch (2)

3) Connect the White Lead from Main Switch and Black one of (-) side of the Motor (3)

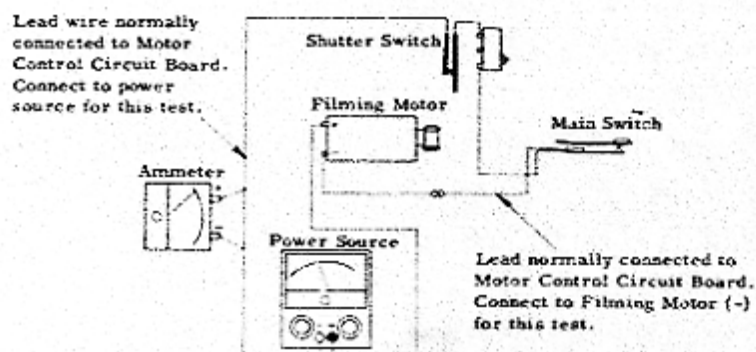


Fig. 25

4) Filming Motor

Release Shutter with Micro Switch turned on.

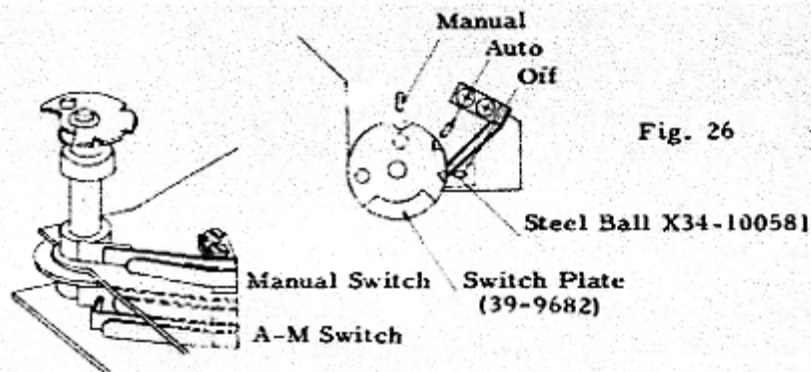
o Current of Motor

Check	Current	Remarks
No-load current	$130 \pm 20\text{mA}$	Measure the current with Motor Gear for auto loading detached.
Slip Current	More than 1000mA	Measure the current with the Single Frame Lever pushed down.

2-3-4 Mounting of ASA Change Unit

o Checking of Main Switch and Auto Manual Switch

	OFF	A	M
M. SW	OFF	ON	ON
AM. SW	OFF	ON	OFF

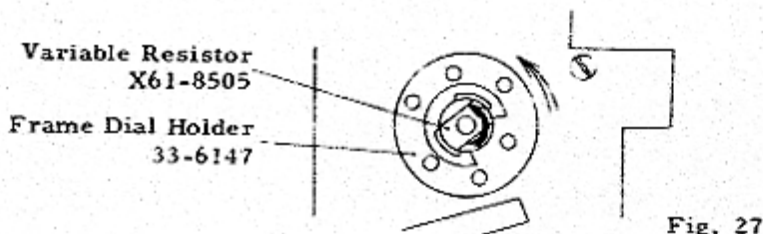


n.b. Be careful not to lose Steel Ball X34-100581 of A-M Switch Plate 39-9682.

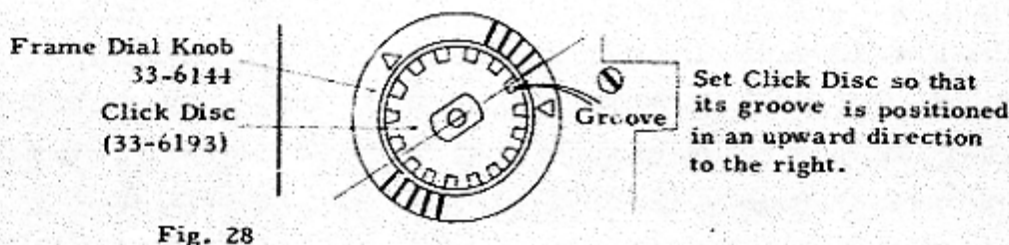
o Adjustment of ASA Variable Resistor

(When replacing Variable Resistor X61-8505)

- 1) Turn Variable Resistor X61-8505 fully counter-clockwise. See Fig. 27.



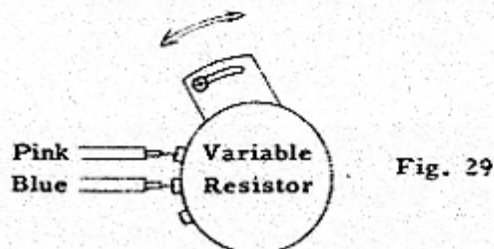
- 2) Turn Frame Dial Holder 33-6147 full counter-clockwise.
- 3) Temporarily mount Frame Dial Knob 33-6144 and Click Disc.



4) Mounting of ASA Dial

Mount it with ASA 320 set to ASA Index.

- 5) In order to obtain a resistance of 9 kohms from the Variable Resistor for 18 frames, ASA 25, adjust ASA Variable Resistor by moving right or left.



o Mounting of ASA Change Unit

- n.b. 1. Check the operation of Switch Lever M.
2. Mount ASA Change Unit bringing it near Lens side.

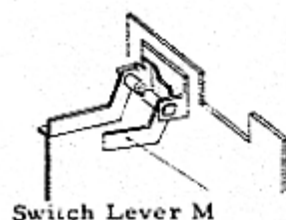


Fig. 30

2-3-5 Mounting of Printed Circuit Board

2-3-6 Soldering of Leads

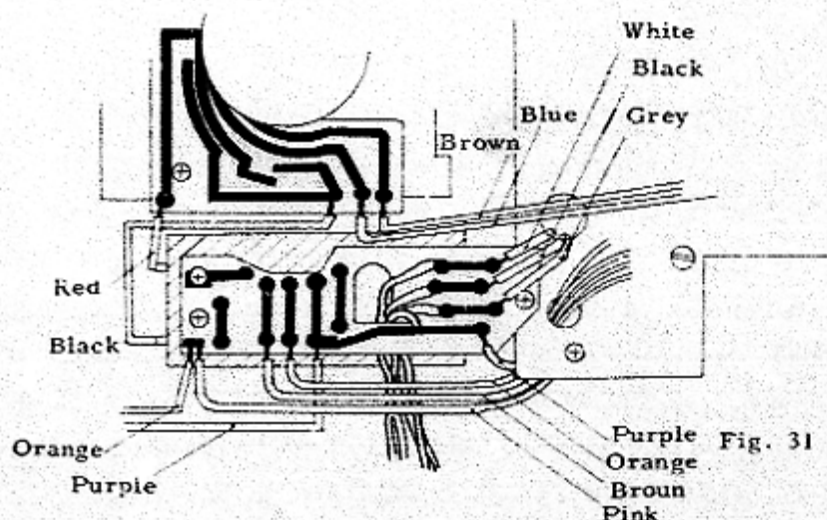


Fig. 31

2-3-7 Mounting of Motor Control Circuit Board

- n.b. 1. The Filming Motor, Motor Control Circuit Boards and the power Transistor mounted on the main body are a factory matched unit and cannot be changed separately.
2. When soldering Lead Wires, take care not to cause any short-circuits.

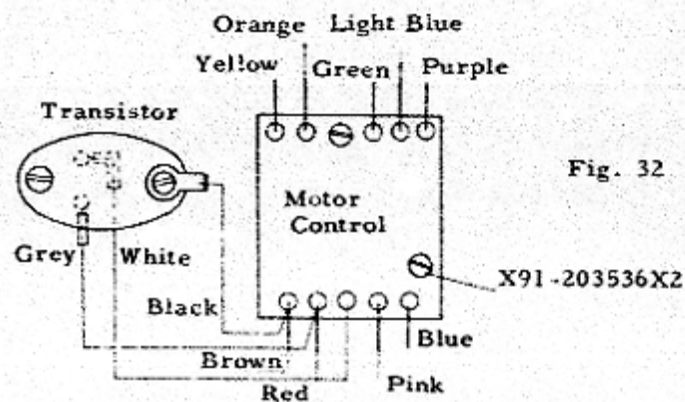


Fig. 32

2-4 Adjustments

2-4-1 Adjustment of Shutter Switch

In order to run Shutter Driving Motor, connect temporarily A and B shown by arrow-marks on Printed Circuit Board. See Fig. 33.

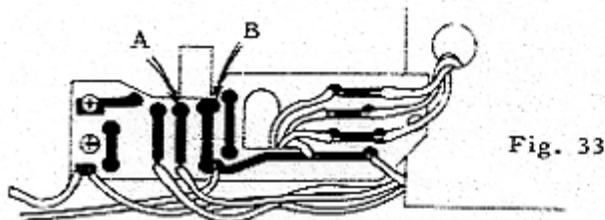


Fig. 33

Power-supply: 12V (+) side: Orange and Brown
(Battery Lead Wire) Use brown lead for
this check.
(-) side: Purple Lead Wire

o Adjusting procedures

- 1) First, set Shutter Switch to Auto or Manual.
(Fig. 34)

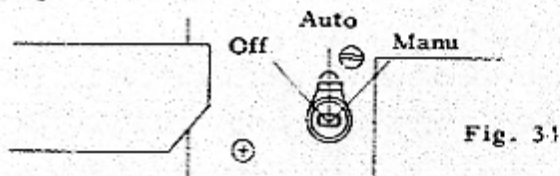


Fig. 34

- 2) Disengage Shutter Switch Contact in advance by turning Shutter Switch adjusting screw clockwise.
(Fig. 35)

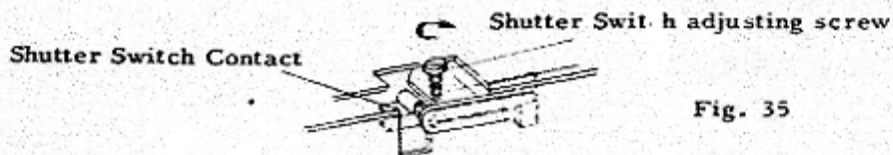


Fig. 35

- 3) Set Stop Lever 39-9839 on Shutter Stopper 33-6620 as shown in Fig. 36.

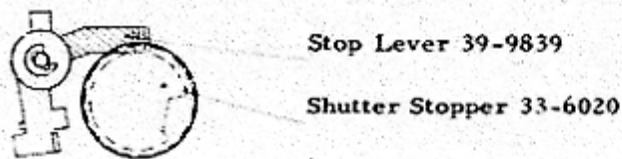


Fig. 36

- 4) Turn shutter switch adjusting screw carefully in the direction of the arrow-mark (counterclockwise) See Fig. 37.

- 5) The moment shutter switch is turned on, shutter stopper rotates, and the stop lever is caught in the groove of shutter stopper. See Fig. 38.

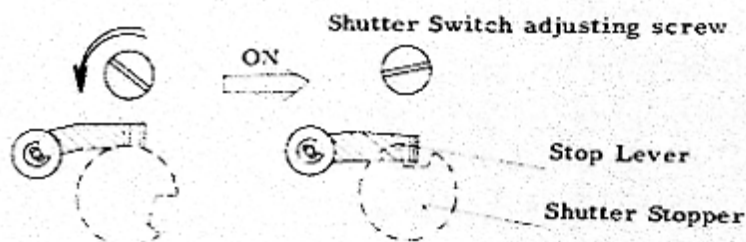


Fig. 37

Fig. 38

- 6) Turn the shutter switch adjusting screw an additional 180° (in the direction of the arrow) after the shutter turns on, and secure it with clear lacquer. See Fig. 39.

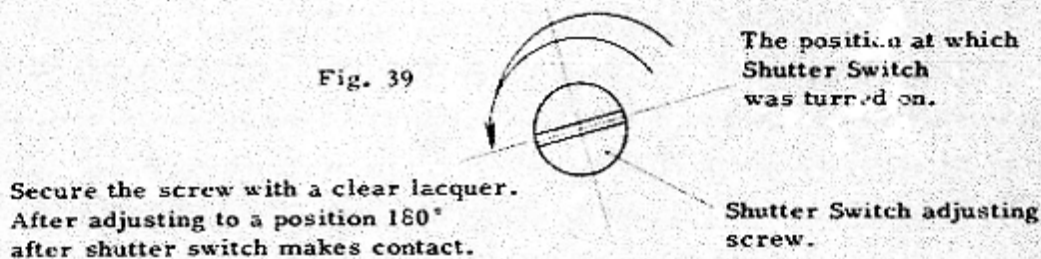


Fig. 39

2-4-2 Adjustment of Frame Speed

12, 18, and 24 frame speeds are adjusted by means of the variable resistors on the Motor Control Circuit Board but 36 and 54 frames cannot be adjusted because they are determined by a fixed resistor.

Frame Speed	Tolerance	Resistor	Adjustable	Required voltage
12	± 1.5	Variable Resistor	YES	(2V)
18	± 1.5	Variable Resistor	YES	(3V)
24	± 2	Variable Resistor	YES	(4V)
36	± 2	Fixed Resistor	NO	(5.9V)
54	± 2	Fixed Resistor	NO	(8.8V)

- * Required voltage means the output voltage from the Printed Circuit Board when a given number of frames has been set.

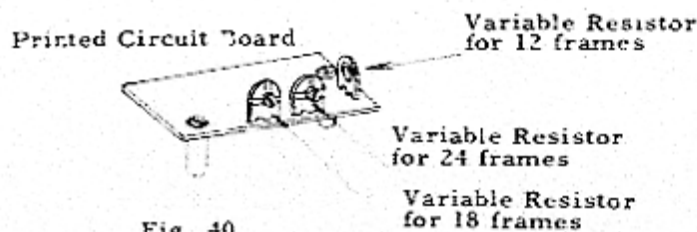


Fig. 40

- n.b. Commence the adjustment of number of frames from 12 frames onwards. The 12 Frames adjustment effects the adjustment of other frame speeds so it must be adjusted first.

Frame Speed Tolerance

Frame Speed	Voltage Drop	Maximum Frame Speed Drop
12, 18	12 → 9V	1 F/S
24, 54	12 → 10V	1.5 F/S

2-4-3 Adjustment of Dissolving Shutter

- o Attach temporarily Dissolving Shutter Lever Unit.
- o To adjust the Dissolving Shutter Blade, adjust the angle at the 4 (1/4) position according to the chart and check the 2, OPEN and CLOSE positions.

	Opening angle	Standard
Open	165°	+0° -10°
1/2	82.5°	±5°
1/4	41.25°	±5°

Make the adjustment by controlling Dissolving Shutter Gear after removing Dissolving Shutter Lever Unit. See Fig. 41.

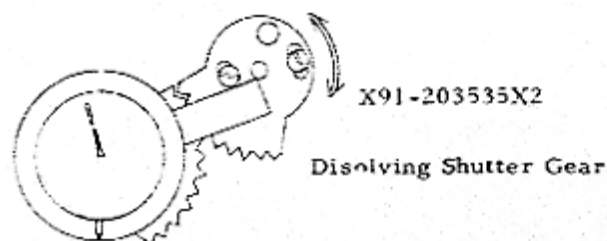


Fig. 41

2-4-4 Normal, reverse rotation, and stop positions of Filming Motor

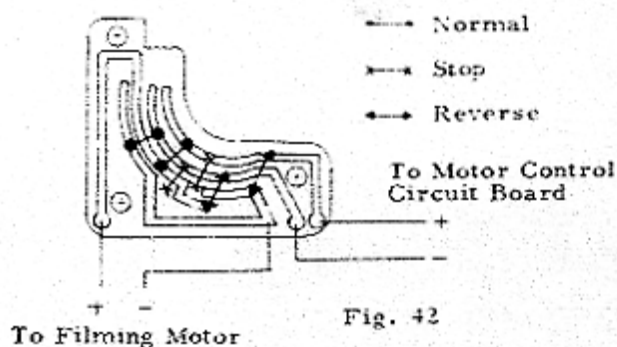
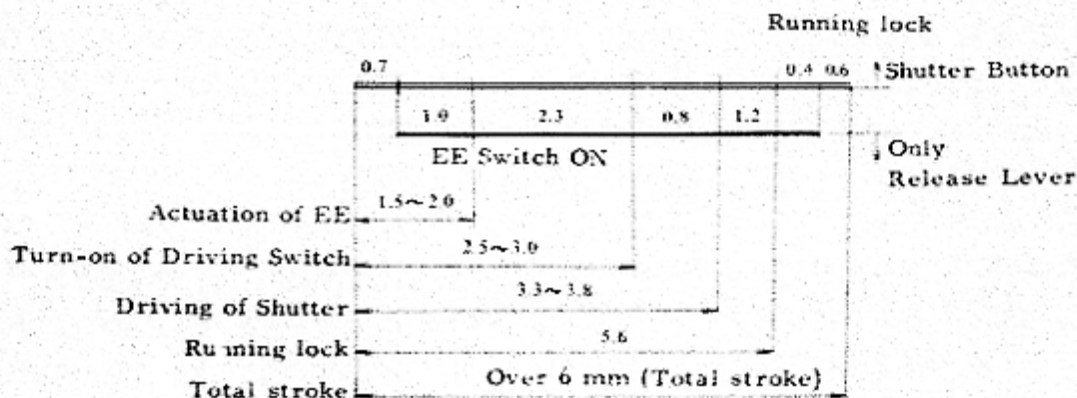


Fig. 42

2-4-5 Checking of Shutter Stroke



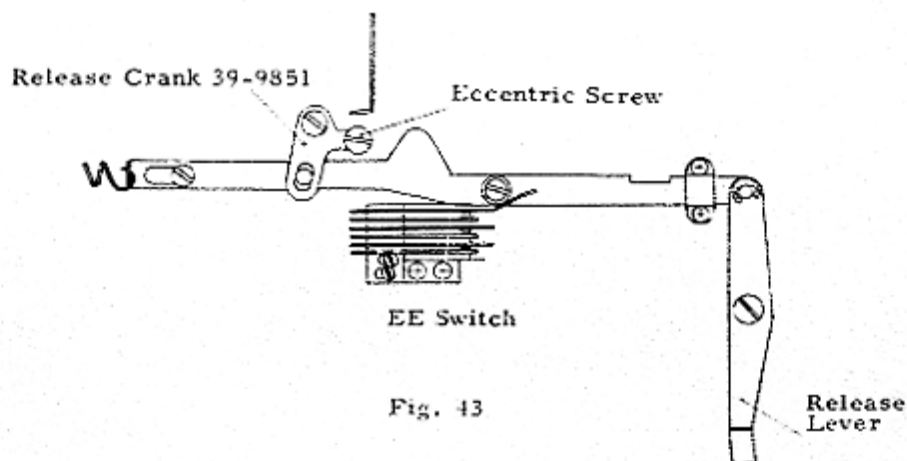


Fig. 43

Adjustment

EE Switch stroke is adjustable by changing position of EE Switch.

The adjustment of Driving Switch stroke is to be made with eccentric screw of release crank 39-9851. See Fig. 43.

- n.b. 1. Shutter button pressure should be below 1200g when shutter is operated.
2. Release pressure for single frame should be below 1000g.

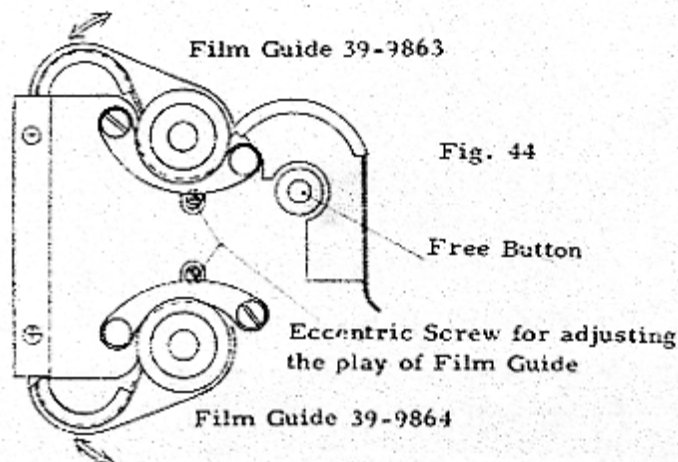
3. Auto Loading System

Work

Procedure

3-1 Adjusting procedures 3-1-1 Checking of Film Guide movement

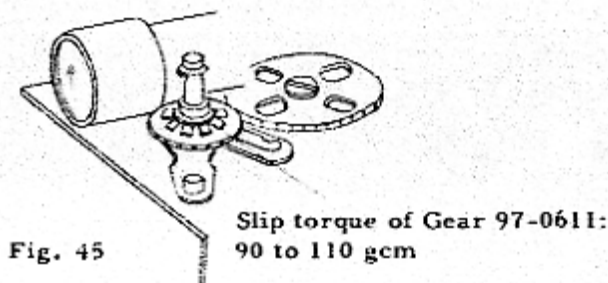
When operating Shutter at 12 frames, Film Guides 39-9863 and 39-9864 should move smoothly to Film Gate side. Also, by pressing Free Button, Film Guide should be reset completely. See Fig. 44.



- n.b. 1. Film Guide movement should be checked by turning Lens system upwards.
2. There should be no play in the Film guide when closed, and there should also be no feeling of looseness on fingering.

Adjustment

- o When film guide does not move when the shutter is operated, motor gear torque should be strengthened. When the film guide is not reset even by means of the free button, the film guide lock disc is at fault and requires attention.



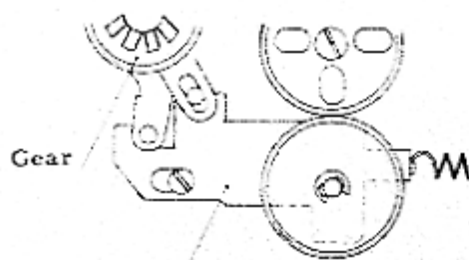
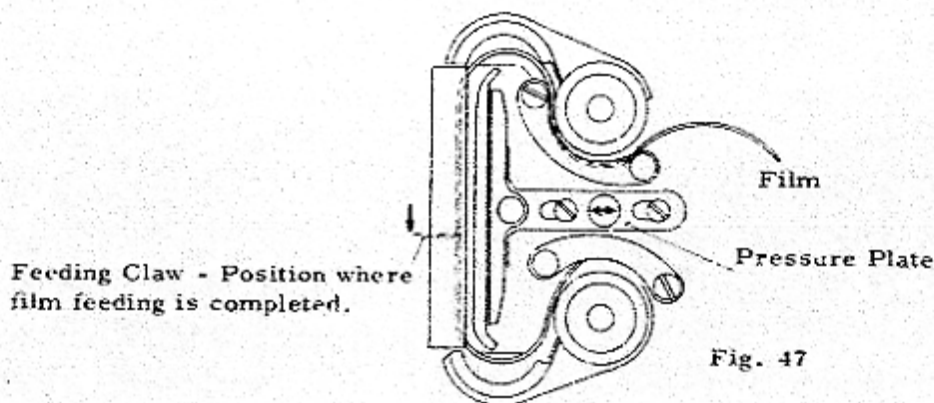


Fig. 46

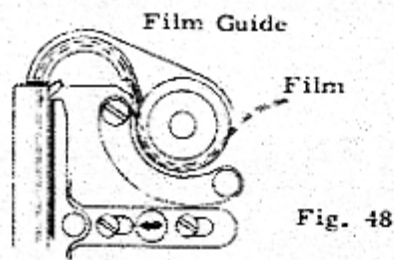
Film Guide Lock Disc 39-9862

3-1-2 Adjustment of Sprocket position Adjustment procedures

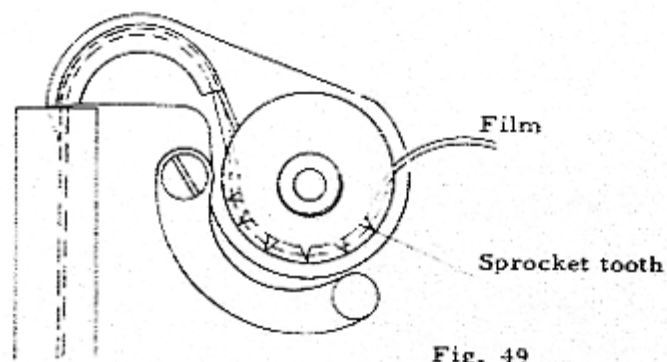
- 1) Opening Sprocket Guide 33-6092 and Pressure Plate, insert the feeding claw into the perforation of the film (about 20 cm long). See Fig. 47.



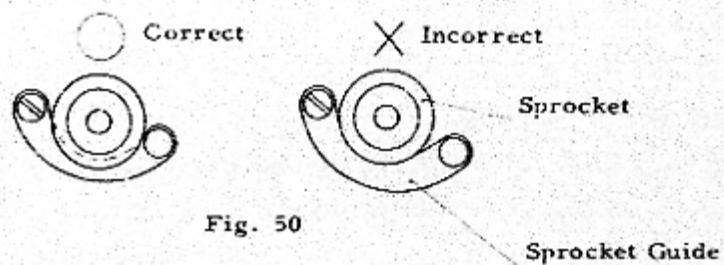
- 2) Set Pressure Plate at the position where the film has been fed completely by Feeding Claw.
- 3) Set the film along Film Guide. See Fig. 48.



- 4) Make the adjustment by changing the mounting position of the sprocket so that the film perforation from the film guide engages with the teeth of the Sprocket. See Fig. 49.



- n.b. 1. The film should be fitted closely to the film guide.
 2. Both upper and lower sprockets should be adjusted.
 3. Care should be taken not to strike the sprocket guide against the sprocket. See Fig. 50.



3-1-3 Checking of Pressure Plate

Pressure Plate pressure: 70 to 90 gcm

3-1-4 Checking of side load

Film Gate side load: 40 to 60 gcm

3-1-5 Checking of take-up torque

Take-up and rewind torque: 60 to 90 gcm

The adjustment of this torque is to be made with the washer on take-up spindle (Rewind spindle).

4. Lens System

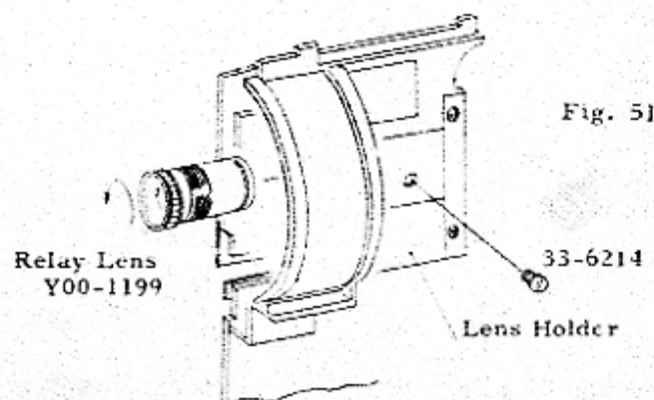
Work

Procedure

4-1 Dismounting procedures

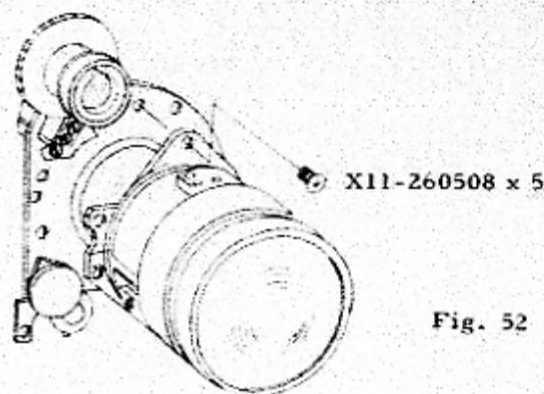
4-1-1 Removal of Relay Lens

- 1) Remove Screw of Lens Holder 39-9822.
- 2) Slacken Screw for Relay Lens through lens holder screw hole. See Fig. 51.



4-1-2 Removal of Zoom Lens Unit

For removing Zoom Lens Unit, loosen the five Screws X11-260508. See Fig. 53.



n.b. When removing Zoom Lens Unit, pay attention to Washer 33-5190 in the Unit.

4-2 Checking of Lens

Omitted

4-3 Mounting procedures

Omitted

4-4 Adjusting procedures

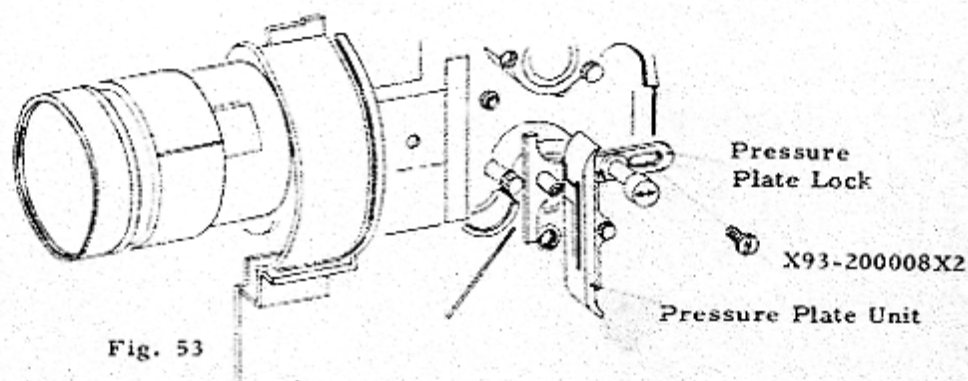
4-4-1 Adjusting Zooming Lens

When zooming the camera from T to W, the deviation

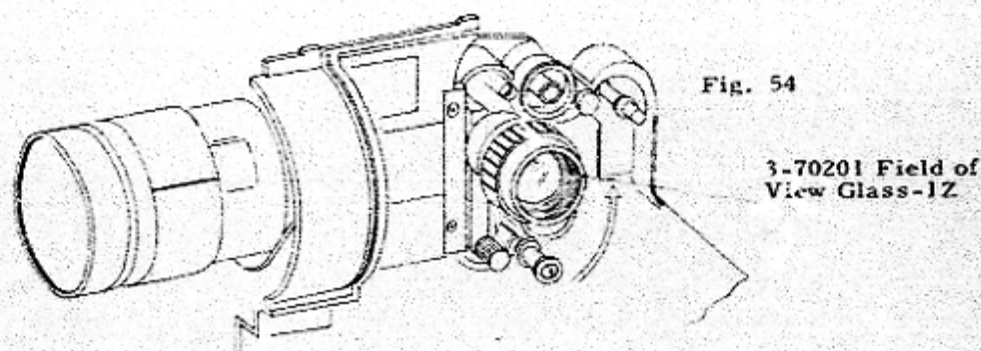
of the projected image should be less than 5%.

Adjusting procedures

- 1) Remove Pressure Plate Unit and Pressure Plate Lock 39-9865.



- 2) Mount 3-70201 Field of View Glass-1Z on Zoom Lens Unit. See Fig. 55.



- 3) Make the adjustment by inserting Washer 33-5190 between Zoom Lens Unit and Aperture Unit. See Fig. 56.

Observing from Frame side, if :

the image goes towards the left.	Provide Washer to A
the image goes towards the right.	" B
the image goes upwards	" C
the image goes downwards.	" D

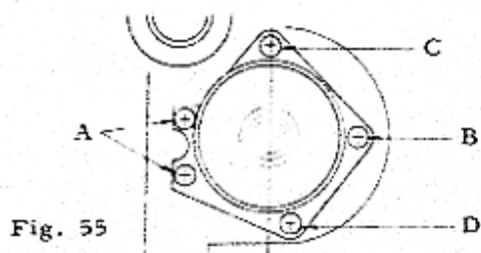


Fig. 55

4-4-2 Focus adjustment

	Focal length of Lens Element	Focal length of Colli- mator	Center on Col- limator	Tole- rance	Scale limit of Collimator
W	7.5	130		0.02	
T	60	300		0.02	
T	60	800		0.02	

Adjusting procedures

- 1) Mount Pressure Plate Lock 39-9865 and Pressure Plate Unit.
- 2) Close Pressure Plate Unit with Pressure Plate Lock after inserting Mirror No. 1 for Motor Zoom.

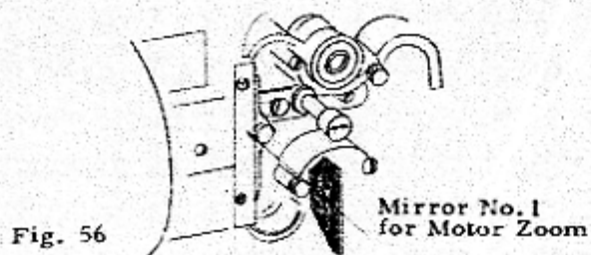


Fig. 56

3) W Focus Adjustment

Take off Body No. Plate (97-9060) to turn Relay Lens through its square hole.

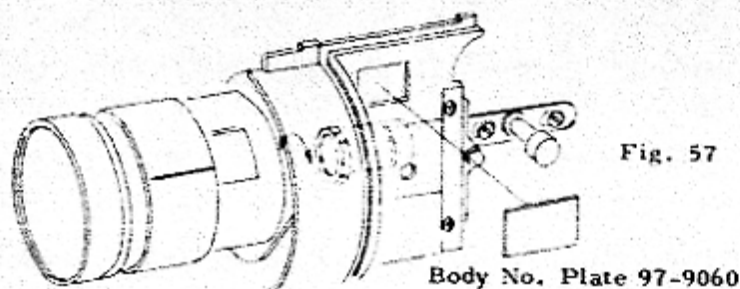


Fig. 57

Body No. Plate 97-9060

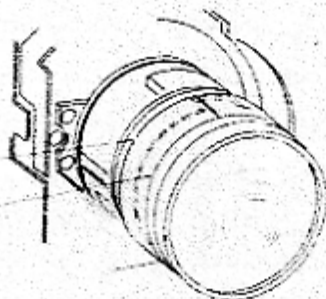
n.b. After completion of the adjustment, fasten Screw.

4) T Focus Adjustment

Change the position of stopper ring 33-5182 with Index Ring shifted by loosening Screw.

n.b. Make the focus adjustments alternately at T and W until both are correct, making the final adjustment at T.

Fig. 58
Stopper Ring
33-5182
Index Ring



4-4-3 Adjustment of Parallax (including adjustment of Range Finder)

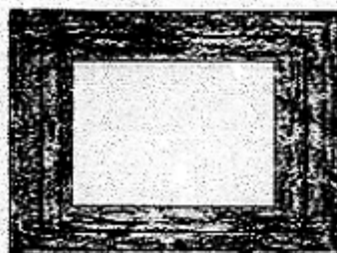


Fig. 59

Projector size
90% of Projector size
80% of Projector size
Example
of Finder Mask

Finder Mask shall be positioned in the shaded area
Adjusting procedures

- 1) After removing Pressure Plate Unit and Pressure Plate Lock, mount Field of View Glass-12 3-70201.
- 2) With Eyepiece Coupler-1S, 3-305, connect eyepiece and finder magnifier. See Fig. 60.

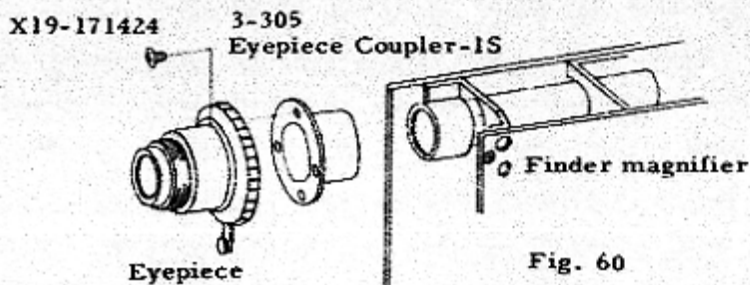


Fig. 60

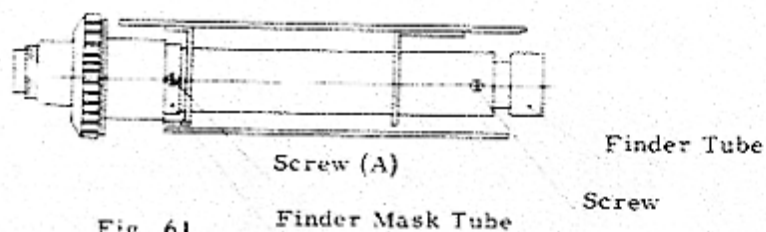


Fig. 61

- 3) With zoom set at T and focus at ∞ , carry out the measurement with Shutter Blade opened.
- 4, Adjustment of inclination of Mask is to be made by turning Finder Mask Tube with Screw A slackened. See Fig. 61.

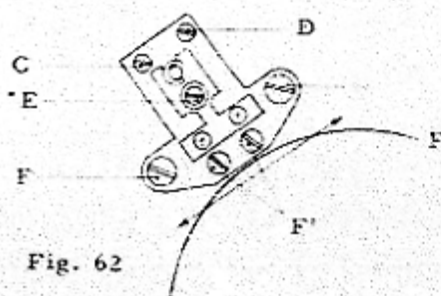
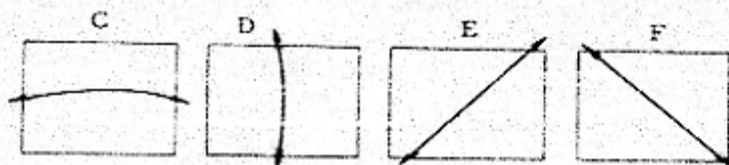


Fig. 62

Adjustment of Range Finder is to be made by moving Finder Tube 33-6124 forward and backward with B Screw loosened. See Fig. 62.

Adjustment of Parallax

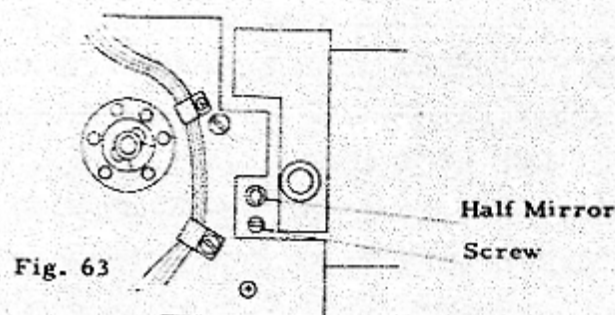


Fault	Remedy
Parallax (horizontal)	Adjust it with Screw C.
Parallax (vertical)	Adjust it with Screw D.
Parallax (in right top and left down direction)	Adjust it with Screw E.
Parallax (in left top and right down direction)	Move Prism in the arrow-marked direction with Screw F loosened.
Parallax (in left top and right down direction)	Only when the adjustment with Screw F is impossible, adjust with F'.

n.b. Be careful not to over-adjust the parallax using Screw F'.

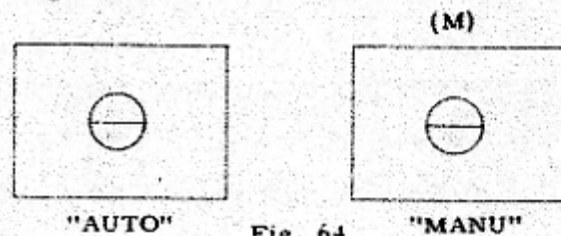
Inclination of image

Adjust the Half Mirror by loosening Screw. See Fig. 63.

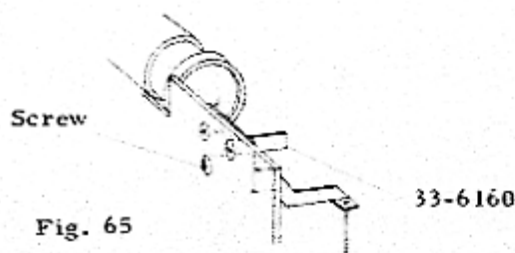


4-4-4 Adjustment of "M" Mark

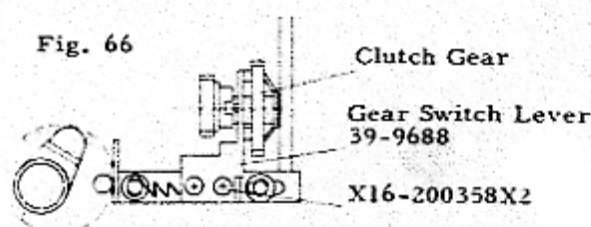
When setting Switch to "AUTO", (M) must fade out of finder and to "MANU", it must appear on finder. See Fig. 64.



The adjustment can be made with Switch (M) Lever. (33-6160). See Fig. 65.



4-4-5 Mounting of Gear Switch Lever. See Fig. 67.

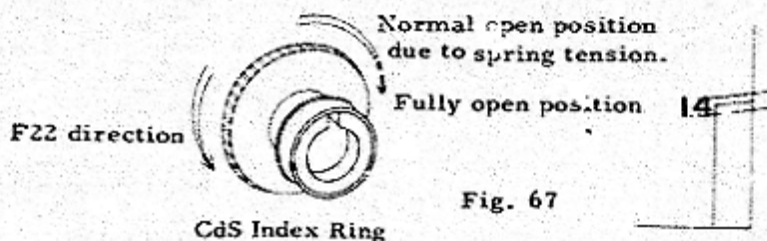


n.b. When setting Switch to "MANU", clutch gear should be free.

4-4-6 Checking of Finder Needle

Checking procedures

- 1) Set Switch to "MANU".
- 2) Gradually turn CdS Index Ring in the aperture opening direction, and observe Finder Needle when the Ring cannot be moved any further. (The position where the needle rest due to spring tension. See Fig. 67.)



* Half of the Finder Needle should overlap the top of the low warning mark.

- 3) Next, turn CdS Index Ring in the F22 direction and observe Finder Needle at the position where the Ring stops.

* The Needle should move completely into the high warning area with one needle width of red showing below the needle. See Fig. 68.



Fig. 68

The adjustment can be made by bending the Finder Needle.

- n.b. 1. The finder needle should be in sharp focus.
2. The Needle should be horizontal at f5.6 position. See Fig. 69



Fig. 69

3. The Needle should protrude into the fl.4 mark. See Fig. 70.

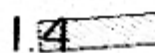


Fig. 70

- 4) Check Needle position at f2.8, 5.6 and 11. Fig. 71.

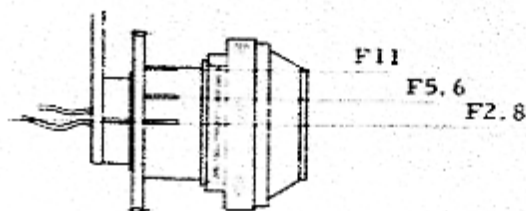
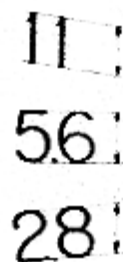


Fig. 71

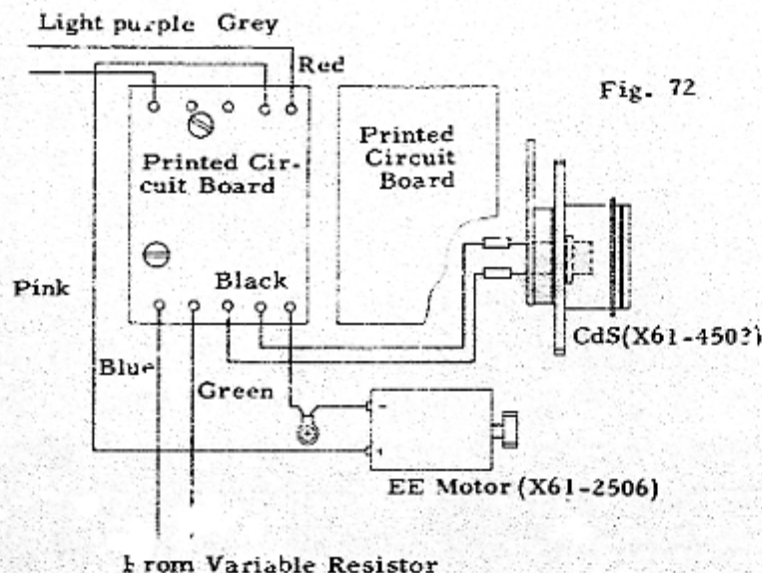


5. EE System

Work

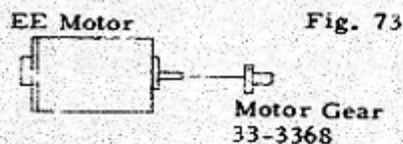
Procedure

- 5-1 Exchange of Printed Circuit Board Printed Circuit Board X61-7079, EE Motor X61-2506 and CdS X61-4503 can be replaced and adjusted individually.

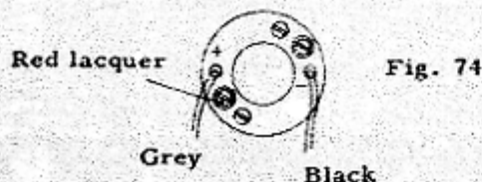


- 5-2 Exchange of EE Motor

- 5-2-1 Mounting of Motor Gear



- 5-2-2 Soldering of Leads



- 5-2-3 Mounting of EE Motor

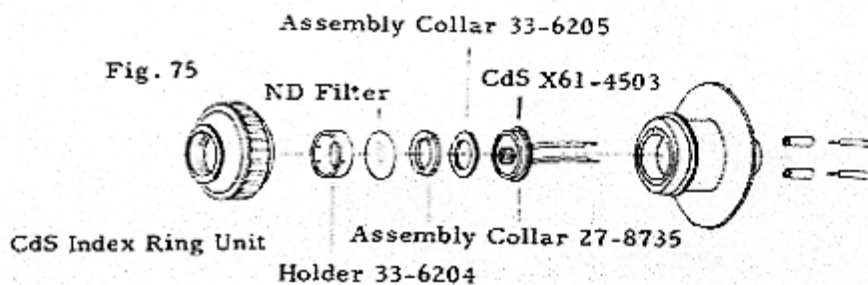
Motor gear 33-3368 should be engaged about 2/3 with gear 39-9923.

- 5-3 Exchange of CdS

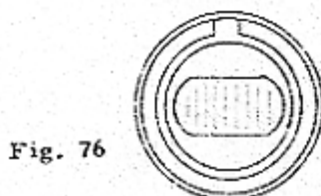
- 5-3-1 Removal of CdS

- 1) Disconnect CdS Leads. (Leads of Printed Circuit Board should be disconnected after removing the Board.)

2) Remove CdS.

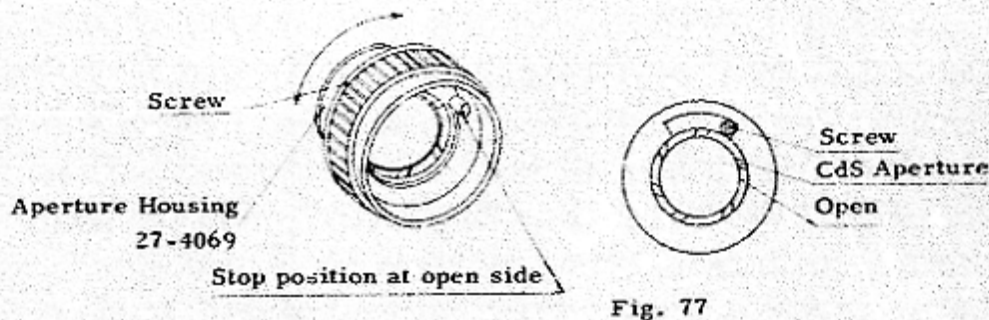


5-3-2 Mounting of CdS



The CdS mask should be horizontal

5-3-3 Checking of CdS Aperture Unit



When Screw makes contact with Aperture opening stop position, CdS Aperture shall be opened.

The adjustment is to be made by rotating Aperture Housing with Screw slackened.

5-3-4 Mounting of CdS Index Ring Unit

Mount the Unit for the purpose of checking and adjusting EE accuracy.

1) Set Screw in the groove of CdS Housing. See Fig. 78.

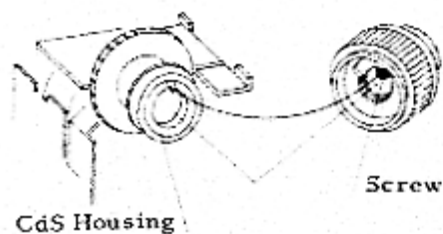


Fig. 78

- 2) Turn fully CdS Index Ring to the open side (the position where it rest due to spring tension), and clamp CdS Aperture Unit with Screw where the Unit makes contact with Opening Stopper.

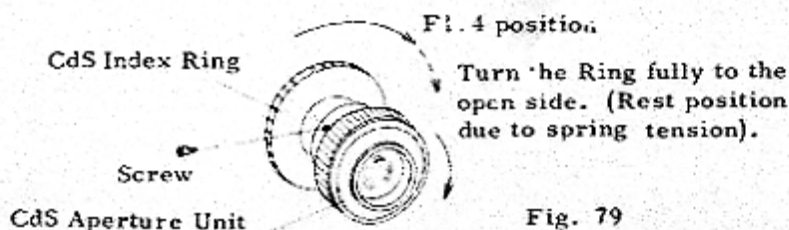


Fig. 79

- n.b. 1. CdS Aperture should be closed down slightly at F1.4 position. Fig. 80.



Fig. 80

2. When mounting CdS Index Ring Unit, pay particular attention to the position of CdS Aperture.

DO NOT FORGET TO MOUNT Main Body Case
Prior to EE adjustment.

A power-supply for adjusting EE would require two equal 6V sources, one for forward, and the other for reverse motor and EE motor. The simplest method is to use the regular camera battery to make the EE adjustments. This is the reason the Main Body Case should be mounted.

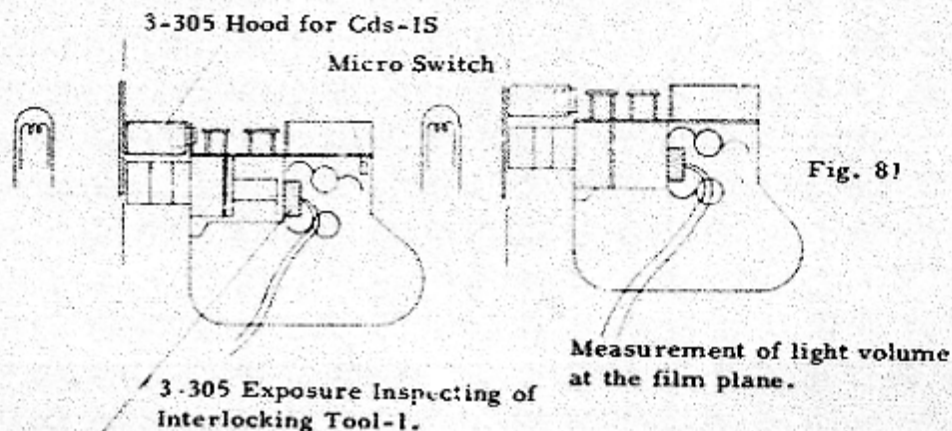
5-4 EE adjustment

ASA	Number of frames	Aperture	Brightness	Standards
25	18	F2.8	206cd/m ²	$\pm 0.5F$
25	18	F5.6	824	$\pm 0.5F$
25	18	F11	3297	$\pm 0.5F$

The adjustment is to be made by adding or removing ND Filters in front of CdS.

Adjusting procedures

- 1) Set Switch to "AUTO", and open Shutter Blade.
- 2) Set the number of frames and ASA.
(Set Disolving Shutter to its "Open" position.)
- 3) Set the brightness of the Canon Meter Inspection Device.
- 4) Mount 3-305 Hood for CdS-IS.
- 5) Mount 3-305 Exposure Verifying of Interlocking Tool-1.
- 6) Set CdS at the center of Canon Meter Inspection Device, and press Shutter Button lightly to actuate only EE Motor.
- 7) When CdS Index Ring stopes turning release your finger from Shutter Button, and place the main Lens (set at T and ∞) at the center of the Inspection Device. And, measure the value of light volume on the film plane with the ohmmeter. See Fig. 81.



Only EE Motor is actuated.

(In the state where Pressure Plate is disengaged, Micro Switch on Sprocket is turned on.)

- 8) If the resistance is too high, remove ND Filter.
If resistance is too low, add ND Filter.

9) Hunting adjustment

Make the hunting adjustment with Variable Resistor of Printed Circuit Board. See Fig. 82.

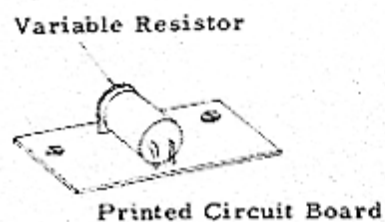
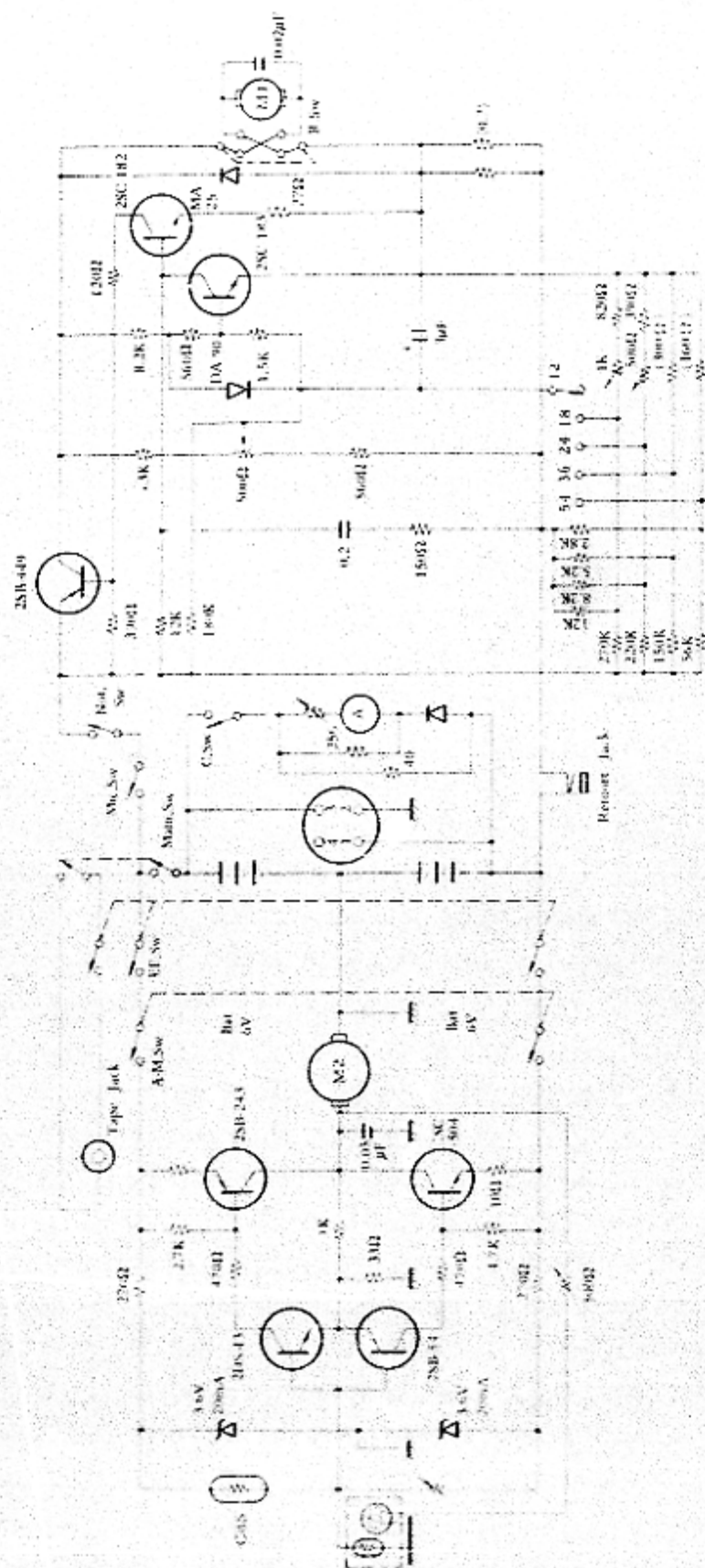


Fig. 82



CANON SERVICE TOOLS LIST

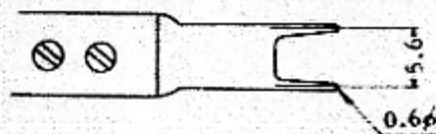
CANON ZOOM DS-8
(REF NO. 3-30501)

TEST EQUIPMENT

<u>Use</u>	<u>Names of Test Equipment</u>
Focus	<ol style="list-style-type: none"> 1. Universal Two Axis Collimator 130 & 300mm 2. Mirro #1 for Motor Zoom
Shutter & Open Angle	<ol style="list-style-type: none"> 1. Frame Counting Device or Frame Counting Device for Open Angle
Field of View	<ol style="list-style-type: none"> 1. Universal Parallax Collimator-1 2. Jig: 3-70201 Field of View Glass-1Z 3. Jig: 3-305 Eyepiece Coupler-1Z 4. Jig: 3-305 Collimator Stand-1
Exposure Meter	<ol style="list-style-type: none"> 1. Canon Meter Inspection Device 2. Ohmmeter 3. Gauge: 3-305 Exposure Inspecting of Interlocking Tool 4. Jig: 3-305 Hood for CdS
Torque	<ol style="list-style-type: none"> 1. Torque Gauge (Counterclockwise) 2. SZ14-3-70201-1Z
Others	<ol style="list-style-type: none"> 1. Gauge: 3-30501 Inspection Tool for Height of Forwarding Claw-1 2. Gauge: 3-30501 Inspection Tool for Positioning Feeding Claw-1 3. Jig: 3-70201 Base Plate Holder-3

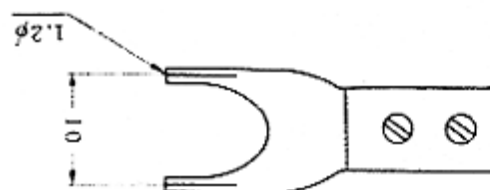
SPECIAL SCREWDRIVER

T06A-3⁷-3181-2



Tightening Speed
Dial
(Common to Scoopic 16)

T06A-33-3375-2



Tightening Remote
Control Socket
(Common to Scoopic 16)

T06A-33-3195-2



Tightening Switch
Change Lever
(Common to Scoopic 16)